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VOLUME 124, No. 19 MAY 8, 1947

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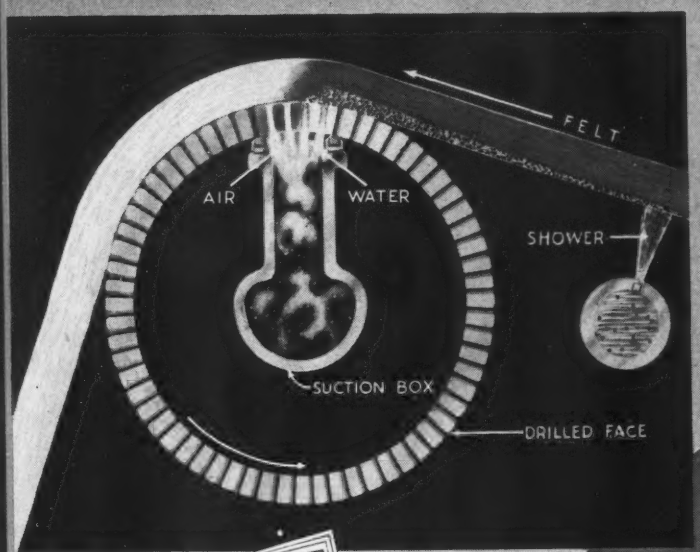

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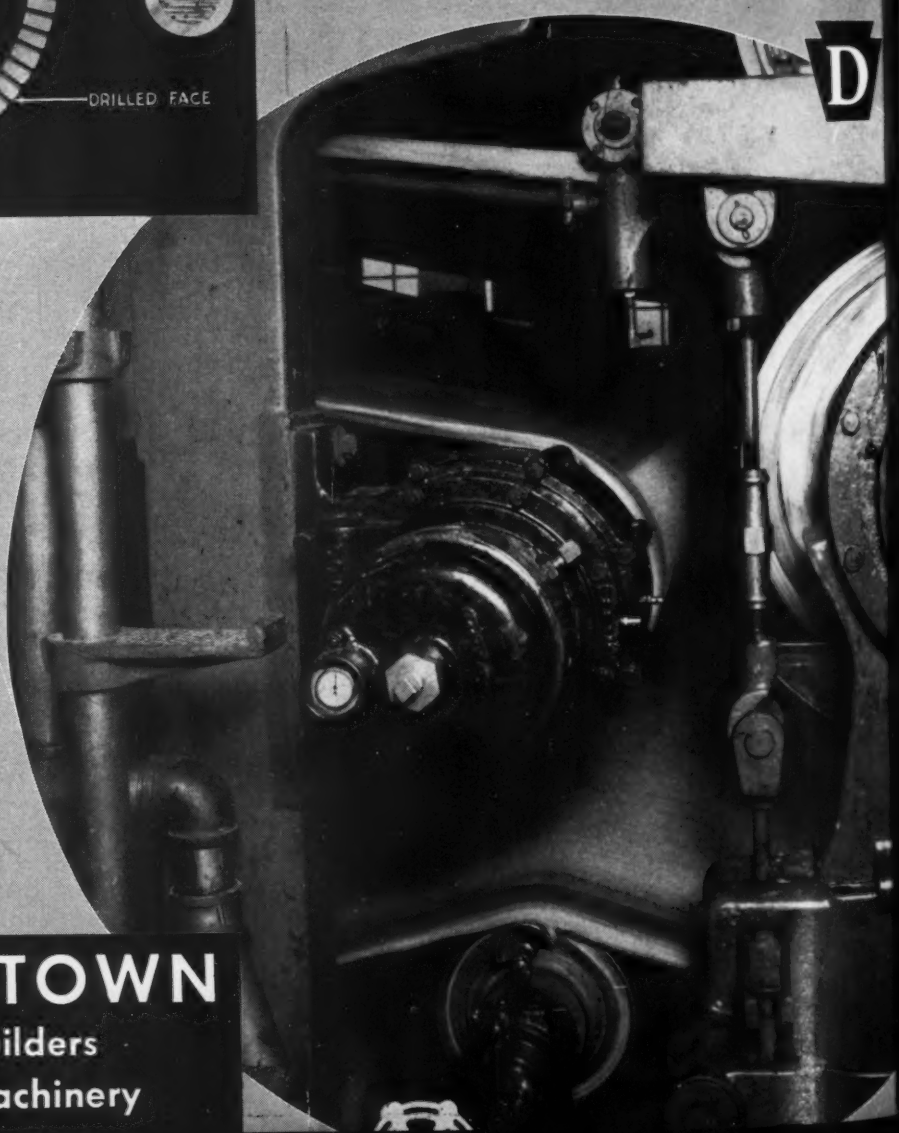

Installation on a 214 inch fourdrinier making machine coated papers.

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Designers & Builders
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CALENDAR OF COMING EVENTS

May 18-21, 1947—National Paper Box Association, Annual Convention, Hotel Traymore, Atlantic City, N. J.

May 22-24, 1947—American Pulp and Paper Mill Superintendents Association, Annual Convention, Edgewater Beach Hotel, Chicago.

June 11-13, 1947—Canadian Pulp and Paper Association, Technical Section, Summmer Meeting. Hotel Algonquin. St. Andrews-by-the-Sea, N. B.

June 16-17, 1947—American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hotel, Atlantic City, N. J.

June 20-21, 1947—Paper and Twine Association, Annual Meeting, French Lick Springs Hotel, French Lick Springs, Ind.

October 27-29, 1947—The National Paper Trade Association of the U. S., Inc., Semi-annual Convention, Hotel Sherman, Chicago.

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Paper TRADE JOURNAL
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VOL. 124, NO. 19 MAY 8, 1947

Capehart Report on Distribution Problem

WASHINGTON—"It is not a shortage of newsprint in this country that is causing the newsprint difficulties of smaller newspapers and publications, so much as maldistribution of unusually large supplies coming into this country," Senator Homer E. Capehart reported in connection with his presentation of the Senate Small Business Committee's Interim Report on "Newsprint Supply and Distribution."

This report has been prepared for the Committee by the Newsprint and Paper Shortage Subcommittee, of which Senator Capehart is chairman, and contains the conclusions and recommendations resulting from investigations and hearings conducted by the Subcommittee the past several months.

"While it is true," said Senator Capehart, "that there is a world shortage of newsprint due to war conditions, we, in this country, are getting by far the greater proportion of the world's supply." Consumption of newsprint in the United States in 1946 totaled 4,296,268 tons — representing an increase of 28.4 percent over 1945, and hundreds of thousands of tons more than peak consumption in prewar years.

The report also brings out the fact that 83 percent of this newsprint is imported from sources outside of our national borders. In 1946, Canada supplied the United States with 78 percent and Newfoundland with 5 percent of our national consumption. United States mills produce only 17 percent of the newsprint we use.

The problem of distributing these supplies of newsprint equitably, so as to assure a fair share to smaller newspapers and publications has been the chief concern of the Subcommittee. It was told by Canadian and American newsprint mills that 95 percent of the newsprint they produce for the U. S. is sold to newspaper publishers who have contracts with the mills. A few smaller newspapers have contracts, but at least 90 percent of the smaller newspapers and other publications in this country must depend upon jobbers who have contracts with mills — and who receive only the remaining 5 percent of the production.

A brief check of advertising and circulation figures, undertaken by the Subcommittee, for a list of 100 leading newspapers in the United States, shows that expansion of circulation and advertising, 1946 over 1945, paralleled the increased production of newsprint to a remarkable degree. The average increase for the 100 newspapers checked, was 26.2 percent in advertising linage and 5.3 in circulation. At least 10 of the larger newspapers recorded advertising gains from 30 to 73 percent, in the one year.

Charts and tabulations in the Interim Report illustrate the distribution pattern, and comparisons in advertising and circulation linage between 1941, '45, and '46, for leading newspapers.

Meanwhile smaller jobbers and publishers reported to the Subcommittee that they are not receiving any portion of newsprint production increases and are being held to 1945 usage, or lower.

The important feature of the Committee's recommendations is the establishment of an overall industry committee which will act to relieve hardship newsprint cases among all types of publications and supply newsprint by means of voluntary contributions from within the industry.

Legislation to implement the organization of such a committee and provide for its protection against antitrust prosecution for a period of one year, was introduced by Senator Capehart, for himself, Senator Wherry, Senator Cain and Senator Martin, on April 9. (S. 1080)

Paper Industry's Leaders Talk At Package Materials Meet

CHICAGO—The second annual Industrial Packaging and Materials Handling Exposition, held last week at the Hotel Sherman, Chicago, brought scores of container and paper box executives into the Chicago area both to listen to the attractive program and participate in the discussions. Produced by the Industrial Packaging Engineers Association of America and designed to focus attention on the "musts" of post-war packaging, with the emphasis on engineered handling and protective packaging, the three-day meeting featured men well known to the paper and allied trades.

S. L. Swenson, Kimberly-Clark Corporation, speaking on April 29 on the subject of "Protective Wrapping" stressed four basic methods of using cushioning blankets or pads as a protective wrapping. The first, "bracing and blocking", he described as a method of interior packaging to prevent movement of contents within the container and to distribute the weight to all of its faces. The second, "blocking", was tective wrapipng. The first, "bracing described as a method of wrapping irregularly shaped objects with soft resilient cushion materials to block out the voids. The resulting package he reported is fairly regular in shape and comparatively easy to handle as a container. "Flotation", Mr. Swenson outlined as a method of completely protecting the article in question from shock and vibration by wrapping it in a thick cushioning material of a sufficient thickness so that its wrapped shape conforms to the shape of the container. This method actually suspends a product within a shipping package. "Absorbent packing" he outlined, as a specialized method of interior packaging designed for cushioning against shock, used in the fragile container of a liquid in shipment. The final method discussed by Mr. Swenson involved "Surface Protection," a method of employing cushioning material to protect highly finished and delicate surfaces from damage by contact with other articles or other packaging materials which cause abrasion or chemical action.

Mr. Swenson amply illustrated the methods he described, using photographs of actual merchandise packed

(Continued on page 16)

W. F. GILLESPIE
Tells of packaging problems

Brownell Named Vice-President By Bulkley, Dunton Company

NEW YORK—Appointment of Harvey A. Brownell as a vice-president of Bulkley, Dunton & Company, Inc. on April 1, was made public this week. Among other activities, Mr. Brownell has been in charge of the social stationery and greeting card papers since joining the organization in 1939. In addition to continuing his activity in these lines, he will supervise the display paper division.

Mr. Brownell's appointment coincides with this twenty-fifth anniversary in the paper business. His career began with Eaton, Crane & Pike Company of Pittsfield, Mass. in 1922, where he received his training in stationery converting. In 1925 he entered the paper merchandising field with Carter, Rice & Company of Boston.

Having been instrumental in the development and styling of many fine and fancy papers, his plan is to expand his effort in the broad field of display papers in which Bulkley, Dunton & Company, Inc. are engaged throughout the United States and Canada.

McCabe on Council of United States Associates

PHILADELPHIA—Thomas B. McCabe, president of the Scott Paper Company, Chester, has been elected to the Council of United States Associates, which is made up of nationally-known figures in business, industry and finance. Mr. McCabe is one of 39 new members, according to an announcement by Philip D. Reed, General Electric Company, chairman of the United States Associates of the International Chamber of Commerce. The group joins 61 members elected a year ago.

The election was conducted by mail ballot from the organization's membership. Each of the new members will serve for a term of three years. The United States Associates represents this country in the International Chamber of Commerce, which is made up of groups of business representatives of 35 countries.

Sinclair Sons Enter Wire Cloth Business

HOLYOKE, Mass.—Richard M. Sinclair and David H. Sinclair have bought the Purves Machine Wire Company, Inc., a long established local paper mill wire cloth firm. Both Sinclairs are war veterans and brothers. Their father, Peter S. Sinclair, is owner of Sinclair Company, one of the larger wire cloth manufacturing plants in this part of the country.

The Purves Machine Wire Company, Inc., was founded by the late Andrew Purves. His daughter, Mrs. Isabel Langhuser, of Holyoke and Chicago, sold the business to the Sinclairs. The plant has four high-speed wire-weaving looms with several large stretching tables and accessory equipment.

© Fabian Bachrach

HARVEY A. BROWNELL
Becomes a Bulkley, Dunton Vice-President

Rising Elects Fred May To Succeed Dempsey

HOUSATONIC, Mass. — At a meeting of the board of directors of the Rising Paper Company, held April 29, 1947, Fred E. May was elected president and general manager succeeding R. H. Dempsey, who died on April 15th.

Mr. May started in the paper industry with the Strathmore Paper Company in 1907. In 1929, he joined the Rising Paper Company as a salesman and was later promoted to sales manager and first vice-president.

Flambeau Elects Robertson of Kansas City Star

PARK FALLS, Wis.—Earl E. Robertson, first vice president of the Kansas City Star Company, has been elected president and treasurer of the Flambeau Paper Company. Executive vice-president, Leonard Kuehl is the general manager. Forrest D. Patterson is vice-president in charge of sales, and O. J. Carlson was elected secretary. Mrs. Helen Teeters is assistant secretary and treasurer.

Members of the board of directors are: Earl E. Robertson, Leonard Kuehl, O. J. Carlson, A. C. Walsted, and Roy Roberts.

McGreen Joins Van Reekum

NEW YORK — Van Reekum Paper Inc., 10 Rockefeller Plaza, made known this week that Louis H. McGreen has joined their purchasing organization in an executive capacity. For the past two years, Mr. McGreen has been purchasing agent for the Quartermaster Corps of the U. S. Army in charge of central procurement of printing paper.

In his new association, Mr. McGreen will assist in filling the purchase requirements of the Van Reekum organization.

Consolidated Names Collins To Vice-Presidency

MONTREAL—Richard Collins has been appointed vice-president in charge of manufacturing of the Consolidated Paper Corporation by L. J. Belnap, president of the company. His headquarters will be at Grand'Mere, P. Q.

Born in Bury, England, Mr. Collins was educated at the Bury School of Technology. He received his early training with Bentley & Jackson, the well-known British firm of papermaking engineers. In 1911, he came to Canada on loan to the Wayagamack Pulp and Paper Company at the inception of that undertaking. After the formation of Consolidated Paper Corporation, in 1932 he was appointed manager of the Wayagamack division; and in June 1945 he was appointed manager of manufacturing of Consolidated Paper Corporation.

In connection with his work, Mr. Collins has travelled extensively abroad and is widely known in the paper industry both in England and in Scandinavia. He has personally made substantial contributions to the development of modern paper making techn He is a member of the Canadian Pulp and Paper Association and of the Technical Association of the Pulp and Paper Industry.

Pennsalt Promotes Drake To Assistant Vice-President

PHILADELPHIA — William P. Drake, manager of sales of the special chemicals division of the Pennsylvania Salt Manufacturing Company, has been appointed assistant vice-president.

Mr. Drake, now 34, joined Pennsalt in 1934. After two years in various Pennsalt plants, he joined the sales organization. In 1939, Mr. Drake was made manager of sales of the Pennsalt cleaners division and in January, 1943, he became manager of sales of the newly organized Special Chemicals Division, which handles all Pennsalt cements, metal cleaners, paints and similar products.

A native of Bath, Maine, Mr. Drake attended Deerfield Academy and Bowdoin College. He is a member of the Psi Upsilon Fraternity, the Deerfield Alumni Association of New York and the Bowdoin Club of Philadelphia. Mr. and Mrs. Drake and their three children now live at Berwyn, Pa.

Employees Elect Fraser Association Head

HUDSON FALLS, N. Y. — A recent meeting of the Employes Association of the Union Bag & Paper Corp. resulted in the election of Hugh Fraser as president to succeed James Griffin. Other officers elected include Elmer Sellingham, vice-president; Bernard Lyons, treasurer; Mary Gennamore, recording secretary; and Gerard Belisle, financial secretary. Trustees elected include James Griffin, John Moynihan and Joseph Ball.

W. H. Upson Succeeds To Brother's Post

LOCKPORT, N. Y.—Election of Charles A. Upson, former president, as chairman of the board of the Upson Company, and of W. Harrison Upson, former executive vice-president and treasurer, to the presidency of the company, was elected by the board of directors at their annual meeting. Henry W. Schmidt, who has been secretary, was named secretary-treasurer. Roy J. Farley, vice-president in charge of production; Harry R. Shedd, vice-president in charge of sales; and O. L. Koehn, comptroller and assistant secretary-treasurer, were re-elected. All directors were re-elected.

Directors authorized an immediate start on an extensive program of plant improvements. The Upson Company manufacturers wall and ceiling panels and operates the largest fibre wallboard and fibreboard specialty mill in the country under one roof.

As board chairman, C. A. Upson will continue to take an active part in company affairs and, relieved of management details, will have more time to devote to research, counsel, and the formation of over-all company policies, directors announced.

Both Upson brothers were young when the Upson company was established in 1910, after both had been graduated from Lockport, N. Y. high school and the Wharton School of Finance and Commerce at the University of Pensylvania.

Previously, C. A. Upson had spent ten years in study and development work in the fibre and industrial field, while serving as general manager of several large paper and wallboard manufacturing companies in western New York state. He created many new paper products, including the well known red and black photographic film wrap that protects Eastman roll film. In one plant, he installed the first semi-continuous wallboard machine.

In 1910, he founded the Upson Company and was joined by W. H. Upson, Jr. They have been associated in the management of the company ever since.

Continuous automatic converting machinery used by The Upson Company was planned and developed by C. A. Upson, who has taken out 36 patents covering wallboard and coating machinery, fibre products and insulating materials.

W. H. Upson, the new president of the company, has had supervision of the administrative activities of the organization and has attained national repute as a merchandiser. Following his graduation from Wharton School, he was engaged as a sales executive with paper-manufacturing concerns in Lockport and Buffalo.

Henry W. Schmidt, now secretary-treasurer of the company, is a graduate of Wharton School of Finance and Commerce at the University of Pennsylvania and is an attorney.

Eagle Lodge Seeks Twenty Cents More

HOLYOKE, Mass.—Local paper mill manufacturers have met with representatives of Eagle Lodge of Papermakers and local 226 in the first session on the reopening of the wage contract governing the local paper industry.

The papermakers are asking for a 20 cent an hour wage increase, the dues check-off, an insurance program, and the incorporation of the second week of their vacation into the contract. The present contract provides for one week vacation with pay and the second week provision is covered in a rider to the contract.

The insurance program solicited includes Blue Cross and Blue Shield and a $1000 life insurance policy with the company paying 75 per cent and the employees 25 per cent.

W. HARRISON UPSON, JR.

CHARLES A. UPSON

Woodpulp Price Fails To Affect Newsprint

TORONTO—With Swedish woodpulp free from export price control and the price at the highest level in 25 years, it has been intimated in some quarters that both Canadian and United States newsprint manufacturers could not be blamed for capitalizing on the situation by diverting some of their production to woodpulps at the expense of newsprint. Respecting Canadian mills, however, this is not possible. The Canadian pulp and paper industry is an integrated industry, where the mills make their own pulp for newsprint and sell the surplus pulp. The mills cannot be worked exclusively on pulp, with newsprint machines standing idle.

Figuring the new prices on the basis of ex-dock, Atlantic seaboard, Swedish wood pulp will now cost U. S. importers $119 a ton for unbleached sulphite; $145 a ton for bleached sulphite; $114 for unbleached kraft pulp; $150 for bleached kraft pulp; and $75 a ton for groundwood pulp. Thus the Swedish pulp prices are above those of delivered U. S. and Canadian pulp, quoted in March this year as: Unbleached sulphite, $115; bleached sulphite, $125; unbleached kraft, $110; and bleached kraft, $135.

On the basis of these prices, the woodpulp segment of Canada's pulp and paper industry is contributing more to pulp and paper company earnings than at any time in the past. At the moment these companies are realizing at least 105 at the mill for each of the 1.6 million tons of pulpwood they are selling and even on the basis of $90 a ton newsprint, the companies will only be realizing some $80 a ton at the mill on their newsprint sales, now averaging 4.4 million tons on an annual basis.

If Canadian newsprint mills diverted any considerable amount of their capacity to woodpulp at the expense of newsprint, the price of woodpulp would soon recede.

So that what might appear on the surface to be an opportunity for Canadian newsprint mills to cash in on the unusually high prices for woodpulp, turns out upon examination to apply only to the extent to which Canadian mills have surplus pulp.

Canadian International is the largest contributor to the total woodpulp surplus, with approximately 235,000 tons of bleached and unbleached sulphite. The Brown Corporation comes next with 200,000 tons of bleached and unbleached sulphate. Third on the list of the most important contributors is B. C. Pulp with 125,000 tons of bleached sulphite and is closely followed by Abitibi with 100,000 tons of bleached and unbleached sulphite. All the others sell less than 100,000 tons annually of wood pulp, but the total for 18 of the largest producers, including those named, runs to 1,340,000 tons of the various types of wood pulp.

Duplessis to Protect Quebec Newspapers

QUEBEC—The newsprint industry of Quebec will have to give the necessary paper to the newspapers of the province before other commitments, Premier Duplessis assured the Legislative Assembly last week, answering a query as to the possible scarcity of newsprint. Mr. Duplessis revealed that he had made clear to American newspaper-owners that his Government intends to maintain full control over the exploitation of the forest resources of the Province.

The Premier said that he had his doubts as to the logic of unduly increasing the price of newsprint. What was wanted, he said, was stability between production and consumption.

Mr. Duplessis said that he had always protected the newspapers of the province, because he was a strong believer in the liberty of the press as a means to combat subversive elements such as communists. By this, he said, he meant those legitimate publications, daily or otherwise, which help to maintain unity in the nation and defend the latter's integrity against revolutionary movements. As to the others, they would remain under observation and be prosecuted if necessary.

The Premier said that he had warned the newsprint manufacturers of his own district of Three Rivers, the center and backbone of that industry, that they would have to modernize their equipment to be able to increase production without forcing their workers to labor on Sundays. Having increased the price of newsprint, he said, there was no reason why they should not raise their standard of production.

He said that the measure adopted during this session to prevent the export of wood cut on Crown lands without a special permit was done to favor local protection and to insure a proper flow of newsprint from producer to consumer.

Issues were grossly exaggerated as to number of pages, thus depriving the lesser publications from obtaining the necessary supplies of newsprint.

Albany Handling Increases Affect Woodpulp Costs

NEW YORK—Tariff charges, effective April 28, at the Albany Port District Commission, Port of Albany, have been recently increased so that carloading is now quoted as 75 cents per short ton, and truckloading at 85 cents per short ton. The two railroads serving the Port of Albany promptly filed changes in their tariffs, also effective April 28, to allow for increased absorptions on the carloading, but only increased from 40 cents per ton to 63 cents per ton. This creates a spread of 12 cents per ton, which will be in addition to the currently quoted line-haul railroad rates from Albany to the points of destination.

Imported woodpulp is the mainstay of Albany's package freight, so that the paper mills will be required to pay the additional 12 cents per ton over current freight rates.

Wisconsin Mills Begin Year's Tree Planting

MERRILL, Wis.—Tree planting by member mills of Trees for Tomorrow Inc. on their own industrial forests will exceed 1,240,000 seedlings this spring.

The 1947 reforestation program of the Tomahawk Paper Company got under way last week when the first of 400,000 trees were tucked into the ground.

The Rhinelander Paper Company has also purchased a mechanical tree planter and will use it to reforest open fields on its industrial forest. High school students will help in underplanting. Rhinelander's quota this spring is 215,000 Norway Pine and White Spruce and White Pine.

The Consolidated Water Power and Paper Company, Wisconsin Rapids, will inaugurate its 1947 reforestration program next week which also calls for the planting of 300,000 White Spruce trees. This planting stock will come from Consolidated's own nursery in Forest county. In addition to its own industrial forest planting, Consolidated has distributed surplus stock of 160,000 white spruce trees to land owners in Oneida and Forest counties.

Mosinee Paper Mills Company which has used a tree planter to advantage for a number of years will add 320,000 new trees to its industrial forest holdings in northwestern Wisconsin, and 20,000 in the vicinity of its mill

The Ward Paper Company, Merrill, and the Whiting Plover Paper Company, Stevens Point, will continue planting projects started several years ago on a smaller scale on plantations adjacent to their mills.

Mando Program Planned, To Abate Stream Pollution

MINNEAPOLIS—Donald D. Davis, President of the Minnesota and Ontario Paper Company has notified Chester S. Wilson, chairman of the Water Pollution Control Commission of the State of Minnesota that the company is undertaking a program of abatement of stream pollution in Rainy River at the company plants at International Falls, Minnesota and Fort Frances, Ontario.

Mr. Davis reported that the company is now engaged in the engineering phases of the development and the installation of equipment and facilities for this purpose, and that this program involves expenditures of approximately $500,000.

Mr. Wilson, chairman of the Water Pollution Control Commission, made known that this is the first project of its kind undertaken in Minnesota since the Commission was organized in 1945.

B. C. Newspapers Get More Paper Says Foley

VANCOUVER—British Columbia newspapers are this year getting from 31 to 56 percent more newsprint than they did before the war from the Powell River Company. This increase applies only to the papers of British Columbia. This was made clear by Harold S. Foley, president of the Powell River Company in a statement issued this week.

"Newsprint like most other commodities, has been in extreme short supply following the outbreak of the war," said Mr. Foley. "Since newsprint rationing ended in June 1946, Powell River Company has managed to provide substantially increased amounts of newsprint to its B.C. consumers."

He explained that assistance both to the newspapers and the company in obtaining this increased production was given by the cooperation of the company's employees in working extra and Sunday shifts.

Mr. Foley continued:

"This increase has gone to British Columbia only. It is true the British Columbia newspapers are not receiving all the newsprint they would like to have, but the same condition prevails in practically every other commodity.

"All the newsprint Powell River Company produces could not be used in British Columbia. It is therefore necessary to market in other parts of the world. Newsprint is not sold on a day basis but is sold on long term contracts.

"It is impossible to divert newsprint which has been committed to other markets for long periods ahead under legal contracts to supply an unprecedented surge in demand in British Columbia.

"Such action could only have a serious effect on our company, its employees and the welfare of a major industry of British Columbia.

"Powell River Company is now installing an additional newsprint machine which will amply take care of British Columbia, but, unfortunately for all concerned, it can not be brought into production overnight."

Minnesota Mining Employees Share Company Profits

WAUSAU, Wis. — The 255 employes of the Wausau plant of Minnesota Mining and Manufacturing Company, makers of abrasive papers, are participating in the quarterly profit distribution of about $172,000. The distribution is based on the company's net earnings for the quarter ended March 31. Each employe eligible for full participation, based on 30 months of service, is equivalent to 5.4 percent of his regular and overtime earnings for the quarter recently ended. Newer employes receive proportionate amounts based on their length of service.

Howard Smith Mills Spend Ten Million

MONTREAL—The current program of expansion and modernization being carried out at the plants of Howard Smith Paper Mills Limited will involve an estimated expenditure of some $10,000,000, it was reported by E. Howard Smith, president of the company, at the annual general meeting of shareholders, held in Montreal last week.

Mr. Smith added that this will require some new financing, a matter which will be considered by the board of directors at an early date.

The president said that the present program is being carried out following an engineering survey prepared by the management and approved by the directors. The estimate of $10,000,000 is based on present costs, but Mr. Smith pointed out that under today's conditions it is difficult to make any reliable estimate as to the amount to which such capital expenditures may run.

Mr. Smith referred to the International Trade Conference now being held under United Nations auspices, and in this connection he voiced "a word of warning." He pointed out that Canadian industrial life has grown up under a system of protective tariffs, and an abrupt departure from that system would result in "calamitous dislocation of many of our industries."

If there is to be any new order in international trade, he declared, time must be given and capital provided for adjustment. "Before this country commits itself to any major change in policy," he said, "considerable care and thought must be given to the subject in order to assure that our economy is not affected adversely."

In the event of any major change, he declared it was strongly urged that Canadian industry be given sufficient time in which to re-tool and adapt itself.

In the absence of specific knowledge as to how such changes would affect Howard Smith mills, the company could not provide for capital changes which such conditions would require. In the meantime, and distinct from this, the current program is being carried out.

Report for 1946 was approved. Directors were re-elected with the addition of R. D. Harkness, who replaces R. D. Robb, who retired from the board February 27, 1947, after being a director since 1920.

Orr Entertains Superintendents

PIQUA, Ohio—The Orr Felt & Blanket Company entertained the Miami Valley Division of the A. P. & P. M. S. A., affiliates, and visitors in Piqua, on April 24. Tours of the mill were made during the afternoon. Approximately 150 guests enjoyed the evening dinner and a magic performance in the company's cafeteria.

ITS BUILDERS INSPECT NEW CHAMPION MACHINE

Suppliers of Champion Paper Fibre's new paper machine equipment at Canton, S. C. make inspection tour with Champion's Vice-President Randall. Left to right: Andrew Spiegelhalter, president of Pusey-Jones Corporation; H. T. Randall, vice-president of The Champion Paper and Fibre Company; Ralph Johnston, vice-president of the Pusey-Jones Corporation; Chester H. Lang, vice-president of General Electric Company; and William Cronkhite, of the industrial sales department of General Electric.

Pacific Mills Enters Bag Production Field

VANCOUVER, B. C. — Pacific Mills Limited of Vancouver and Ocean Falls, B. C., has entered the kraft paper bag manufacturing field. This news was disclosed in the April issue of the company's magazine, *Paper People*. With an initial installation of four Series 80 Potdevin machines on the second floor of its Vanconver converting plant, the company reports it has a production potential of "more than 100,000 bags per day."

At present its bag output is confined to self-opening, square kraft bags in the standard range of sizes up to 35 pounds capacity. High grade kraft paper, manufactured at Pacific Mills Ocean Falls division, is used in basis weights from 25 to 50 pounds, and in either MGMS or MF form.

In keeping with the company's widely-known "Indian Head" trade mark insignia, its kraft bags are sold to the jobbing trade under such B. C. Indian names as "Haida" and "Skookum."

A unique method of baling and packing its bags for shipment, in which another Pacific Mills product, "Pac Tape" (kraft gummed tape) is utilized to achieve a smooth, attractive-appearing shipping container, is being well-received by the trade, it is reported.

Decision to add kraft S.O.S. bags to the already extensive range of converted paper products being manufactured by Pacific Mills was prompted by "the dual objectives of making its range of specialty paper products more complete, and to provide better service to its Western Canadian jobbing connections," the magazine article states.

In addition to its own bag manufacturing activities, the company is continuing to supply bag grades of Ocean Falls kraft to other Canadian paper converting accounts.

Minnesota Mining Makes New Paving Material

WAUSAU, Wis. — The Minnesota Mining and Manufacturing Company, manufacturer of abrasive papers, has launched the manufacture of a new paving material and has announced start of construction of a new paving material plant for permanent operation, to make use of the refined graystone not used in the production of roofing granules.

The new product is called "Wausau Sheet Asphalt." Tests have shown it will make a superior paving material for highways, driveways and runways. Because it is easy to apply, it will lend itself to a wide variety of uses, for cowbarn floors, garage floors and similar projects.

First marketing will be in the Wausau area, but it is expected the new product soon will be in wide demand for road-building in the middle west.

FINANCE

Bathurst's Net At New High Record

TORONTO — Financial statement of Bathurst Power & Paper Company Ltd. for 1946 shows an increase in volume of sales from 115,181 tons to 122,304 tons, and dollar values up from $7,986,326 to $11,753,798. Both established new all-time records.

Operating revenue of $2,475,791 compared with $1,092,451 in 1945. After depreciation reserve of $489,877 (against $400,062), depletion of $116,402 (against $105,477), and provision for income and excess profits taxes increased from $285,000 to $795,000, and an addition of $70,000 restored from an inventory reserve previously provided, net profit was $996,319, up $618,541 from the 1945 profit of $377,778.

Total net earned on the "A" was $2.28 a share, and on the "B" 28 cents a share. Payment of $400,000 ($1 a share) on the "A" stock left $596,319 surplus for the year, compared with a deficit of $22,222 for 1945, after payment of a similar dividend of $1 a share or $400,000 when 94 cents a share was earned.

The report states that "the consolidated statements are not comparable with the previous year's accounts, since the financial position and the results of the operations of the two shipping container subsidiaries, Shipping Containers Limited and Kraft Containers Ltd., are now included herein." It is further noted, in regard to consolidated net earnings of $996,319, that "the two shipping container subsidiaries contributed substantially to these earnings."

Capital expenditures for additions to properties during 1946 amounted to $593,680. These were a part of the general program of rehabilitation and included improvements to the kraft pulp mill and kraft liner and corrugating board mill. "During the year a new laboratory for development and research work was added to the plant. The company has placed an order for an additional steam turbo-generator unit with a rated capacity of 7,500 kilowatts.

The balance sheet shows a bank loan increased from $600,000 to $1,400,000. Since Dec. 31, 1946, this loan has been reduced to $1,000,000. Fixed assets, including the two container plants, increased from $17,338,768 to $20,013,400.

Total production during the year 1946 increased by 7,632 tons or 6.65 percent from 114,727 tons to 122,359 tons. Of this total, kraft products amounted to 77,214 tons, up from 69,786 tons; unbleached sulphite pulp, 24,393 tons and boxboards, 20,752 tons. The last two almost unchanged from 1945.

The report, signed by R. L. Weldon, president, notes that "basic costs of raw materials, supplies and wages continued their rising trend." Pulpwood deliveries in 1946 were "reasonably satisfactory," and the general situation for the present season is declared to be "well in hand." In regard to the outlook for 1947, the president states: "Demand for the company's products and those of its subsidiaries continues in excess of supply."

Gypsum Profits Up 54 Per Cent

BUFFALO, N. Y. — With sales up 54 percent to $11,619,895, the National Gypsum Company of Buffalo reported a net profit of $1,314,617 in the first quarter of 1947, equal to 72 cents a share, compared with $673,960, or 42 cents a share, in the first three months of 1946. The earnings were after allowance for dividends on the preferred. In the first quarter a year ago, a smaller number of shares was outstanding.

"Current orders reflect continued high demand for each of the company's products," declared President Melvin H. Baker.

Hooker Pays Dividends On Preferred And Common

NIAGARA FALLS, N. Y.—Dividends on the cumulative preferred stock and the common stock of the Hooker Electrochemical Company have been declared by the board of directors. A quarterly dividend of $1.0625 has been declared on the preferred stock, payable June 26 to stockholders of record June 2. A dividend of 50 cents a share has been declared on the common, payable May 28 to stock of record May 1.

F. C. Huyck Shares Return $28.17

RENSSELAER, N. Y.—The annual financial report of F. C. Huyck & Sons for 1946 indicates that net sales for the year totaled about $11,126,470 with a profit of $1,021,972 after payment of dividends on preferred stock.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending May 3, 1947

STOCKS

	High	Low	Last
A. P. W.	4¾	4⅝	4¾
Armstrong Cork Co.	44¾	44	44
Armstrong Cork Co., pf.	105	104⅛	105
Celotex Corp.	25½	23½	24⅞
Celotex Corp., pf.	20¾	20¾	20¾
Certain-Teed Products Corp.	15¼	14½	15
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	22	21	22
Champion Paper & Fibre Co., pf.	110	109	109
Congoleum Nairn Co.	26	25	25⅝
Container Corp. of America	39	38⅜	38½
Crown Zellerbach Co.	27⅜	25	27⅜
Crown Zellerbach Co., pf. 4.20	105	102¾	105
Crown Zellerbach Co., pf. 4	110	108½	110
Dixie Cup Co.	28	27	27½
Dixie Cup Co. A	54	54	54
Flintkote Co.	29	27⅛	28⅛
Flintkote Co., pf.	106¾	106¾	106¾
Robert Gair	7	6⅝	6¾
Robert Gair, pf.	20¼	20	20⅛
International Paper Co.	43⅞	40¼	42⅞
International Paper Co., pf.	....	....	....
Johns Manville Corp.	118½	114	118½
Johns Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.,	25	24¼	24¾
Kimberly-Clark Corp., pf.	107¼	106½	107
Mac Andrews & Forbes	35	34¾	34¾
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	23⅜	22½	23⅜
Mead Corp.	21	19¾	21
Mead Corp., pf. 4¼	101	101	101
Mead Corp., pf. 2	49	49	49
National Container Corp.	39½	36	39⅛
Paraffine Companies, Inc.	70½	69	70½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	22	19¾	21¾
Rayonier, Inc., pf.	37	37	37
Ruberoid Co.	49	46	49
Scott Paper Co.	43½	43½	43½
Scott Paper Co., pf.	98½	96½	97¾
Sutherland Paper Co.	40	38¾	40
Union Bag & Paper Corp.	30⅛	29	30
United Paperboard Co.	15½	14⅜	15½
U. S. Gypsum Co.	99	96	98
U. S. Gypsum Co., pf. 7	196	194	194
West Virginia Pulp & Paper Co.	37¼	36	37⅛
West Virginia Pulp & Paper Co., pf.	112	112	112

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp., 3½s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '66	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending May 3, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	41	40½	41
Hummel Ross Fibre Corp.	....	....	....
St. Regis Paper Co.	9	8¾	9
Taggart Corp.	9	8¾	8¾

BONDS

American Writing Paper Co., 6s '61	101	101	101

Blaw-Knox Pulpwood Grapples help fight the Battle of Production for:—

Abitibi Power & Paper Co.	Sault Ste. Marie, Ontario, Can.
Armstrong Cork Company	Macon, Ga.
Badger Paper Mills, Inc.	Peshtigo, Wis.
Blandin Paper Company	Grand Rapids, Minn.
Brown Corporation	Sanmaur, Quebec, Can.
Brunswick Pulp & Paper Company	Brunswick, Ga.
Champion Paper & Fiber Company	Canton, N. C.
Chesapeake Camp Corporation	Franklin, Va.
Chesapeake Corporation	West Point, Va.
Consolidated Water Power & Paper Co.	Mead, Ontario, Can.
Consolidated Water Power & Paper Co.	Rhinelander, Wis.
Consolidated Water Power & Paper Co.	Wisconsin Rapids, Wis.
Container Corporation of America	Fernandina, Fla.
Everett Pulp & Paper Company	Everett, Wash.
Filer Fibre Company	Filer City, Mich.
Flambeau Paper Mill Company	Park Falls, Wis.
Gaylord Container Corporation	Bogalusa, La.
Gulf States Paper Corp.	Tuscaloosa, Ala.
Hoberg Paper Mills	Green Bay, Wis.
Hollingsworth & Whitney	Birmingham, Ala.
Hudson Pulp & Paper Company	Palatka, Fla.
Hummel-Ross Fibre Corp.	Hopewell, Va.
F. Hurlbut Company	Green Bay, Wis.
International Paper Company	Camden, Ark.
Kieckhefer Container Company	Plymouth, N. C.
Kimberly Clark Company	Kimberly, Wis.
Kimberly Clark Corporation	Neenah, Wis.
Kimberly Clark Corporation	Niagara, Wis.
Longview Fibre Company	Longview, Wash.
Marathon Paper Mills Company	Rothschild, Wis.
The Mead Corporation	Chillicothe, O.
Minnesota & Ontario Paper Company	International Falls, Minn
Mossinee Paper Mills Company	Mossinee, Wis.
Nekoosa-Edwards Paper Company	Nekoosa, Wis.
Nekoosa-Edwards Paper Company	Port Edward, Wis.

***VERY IMPORTANT PEOPLE**

North Carolina Pulp Company	Plymouth, N. C.
The Northwest Paper Company	Cloquet, Minn.
Ontario-Minnesota Pulp & Paper Co., Ltd.	Kenora, Ontario
Puget Sound Pulp & Timber Co.	Bellingham, Wash.
Rayonier, Inc.	Fernandina, Fla.
Rayonier, Inc.	Hoquiam, Wash.
Rhinelander Paper Company	Rhinelander, Wis.
Richmond Cedar Works	Norfolk, Va.
Roddis Lumber and Veneer Co.	Marshfield, Wis.
St. Joe Paper Company	Port St. Joe, Fla.
St. Regis Paper Company	Tacoma, Wash.
Southern Johns-Manville Products Corp.	Natchez, Miss.
Southern Kraft Division	Bastrop, La.
Southern Kraft Corp.	Panama City, Fla.
Southern Kraft Division	Georgetown, S. C.
Southland Paper Mill	Lufkin, Tex.
Soundview Pulp Company	Everett, Wash.
Union Bag and Paper Company	Savannah, Ga.
Wausau Paper Mills, Inc.	Brokaw, Wis.
W. Va. Pulp & Paper Co.	Charleston, S. C.
Yawkey-Bissell Corp.	White Lake, Wis.

Perhaps you would like to know the reasons for this wide acceptance... Write today for Bulletin No. 2098.

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BLAW-KNOX *PULPWOOD GRAPPLES*

St. Regis-Taggart Ups Pay Rate 18½ Cents

WATERTOWN, N. Y.—A general wage boost of 13½ cents per hour has been granted to 3,000 northern New York union workers of the St. Regis Paper Company and the Taggart Corporation, effective May 1, under a new one-year contract. The pay raise will lift the hourly scale from 86½ cents to $1; the increase amounts to 15½ percent.

Union heads sought an increase of 18½ cents an hour along with at least six other demands involving paid vacations, a five cent differential for night shifts and three additional holidays with pay. None of the demands was met by management.

The salary increase of 13½ cents per hour was agreed upon after two full days of conference between company officials and representatives of unions held here at the Hotel Woodruff.

The boost will mean an additional outlay of $1,000,000 in payrolls for the year ending May 1, 1948, said Clifford T. Wenzel, personnel director for St. Regis.

The 3,000 workers affected are members of 22 union locals and involve all trades affiliated with the operation of the St. Regis and Taggart plants in the area extending from Oswego through the north country.

Among the demands sought by the unions, none of which was met, were: Two weeks' paid vacation for employes with three years' service; three weeks' paid vacation for ten-year employes; New Years Day, Memorial Day and Thanksgiving Day off with pay; changes in seniority schedules and a five-cent differential for the second and third night shifts.

Here for the two-day conference and to write the new union-company contract were some of the leading officers of union internationals.

Representing the St. Regis and Taggart firms at the wage conference table were: Mr. Wenzel, Alex Smalley, New York, labor advisor to the president; William Mercer, New York, assistant to Mr. Smalley; William R. Adams, Watertown, general manager of Taggarts; Lewis Burdick, St. Regis plant superintendent, Deferiet; and Willard Hahn, New York, general manager of the bag plants.

Wausaw Paper Mills Set Safety Record

BROKAW, Wis. — Wausaw Paper Mills Company safety groups met recently with company officials and representatives of the Employers Mutuals Insurance Company in the village hall here, in recognition of new gains in safety by mill employes.

For a six-month period there was a new low accident frequency of 7.5, indicating four lost-time injuries in more than 500,000 man hours worked.

SANDY HILL'S BASKETBALL TEAM TAKES PENNANT

An enlarged Employee Sports and Recreational Program at the Sandy Hill Iron & Brass Works has been rewarded this year by an undefeated championship basketball team. The championship was earned in competitive play in the Glens Falls Area Industrial Recreation League during the 1946-47 season. All members of this team are recently discharged veterans.

The Sandy Hill soft ball team tied for the championship of the League last season and it is expected that two teams may be placed in competition with the opening of the 1947 soft ball season.

Two management-sponsored bowling teams rolled in league matches during the past winter season. A Rifle and Pistol Club has a well equipped range in one of the plant buildings and competitive matches are shot each week during the season in a Tri-County Association."

Will Spend $2,350,000 To Reduce Pollution

COVINGTON, Va. — Paul B. Lacy, manager of the local plant of the West Virginia Pulp & Paper Company, has reported plans for a long-range improvement program designed to reduce stream and air pollution at Covington, resulting from operations of the paper plant. Manager Lacy estimated the total cost of the projects now under construction or on order for abatement of stream, dust and smoke pollution to be in excess of $2,350,000.

"Two electrostatic precipitators and auxiliary equipment will be installed by the summer of 1948 at a cost of $500,000 to improve atmospheric conditions," he stated.

"Last January the company filed with the Virginia State Water Control Board plans for Jackson River projects approved at a cost of $1,750,000. This program has been expanded to include six disc evaporators in conjunction with the electrostatic precipitators, to cost in excess of $100,000 and which will lessen the amount of waste discharged into the stream."

Lacy added, however, "the program would not clean up entirely stream and air pollution in the community but would make a noticeable improvement."

Finch, Pruyn Hikes Wages

GLENS FALLS, N. Y.—Finch, Pruyn & Company has negotiated a new wage agreement which calls for an increase of 12 percent. The new contract was adopted at the annual conference of labor and management representatives and establishes a new minimum rate of $1.01 an hour for males, affecting several hundred employes. The agreement includes adoption of the new minimum wage scale of the International Brotherhood of Papermakers for newsprint and other groundwood paper mills. All present working conditions in the mills will be continued.

Several unions were represented at the conference. The International Brotherhood of Papermakers was represented by Bernard Burns, Ralph Brewster and W. R. Smith while the local branch sent Albert Tracy and Edward Demers. Herbert W. Sullivan, vice-president of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers, represented that organization while Bernard Oddy and Thomas A. Parsons represented the local. Finch, Pruyn & Co., Inc., was represented by Samuel Pruyn, Harold F. Bullard and Lyman A. Beeman, vice-presidents.

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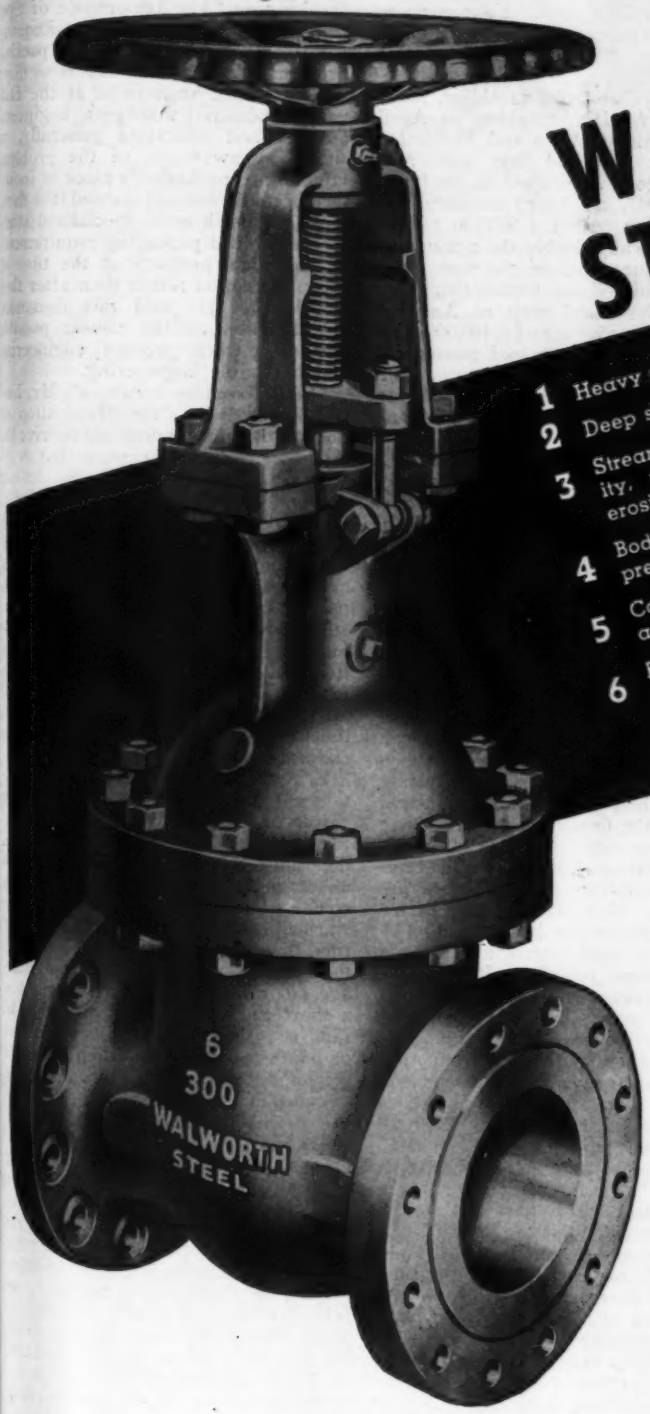

1 Heavy steel walls for extra strength and protection.

2 Deep stuffing boxes to eliminate costly leaks.

3 Streamlined ports to make possible a high velocity, non-turbulent flow, and reduces possible erosion.

4 Bodies and bonnets engineered to withstand pressure and minimize distortion.

5 Cast body guide rib faces, machined to insure accurate disc centering.

6 Exact design, metallurgy and construction of yoke nuts, bonnet bushings, gland followers, handwheels and other vital parts to assure better service for a longer period of time.

Is there any wonder that out in the field, where approval is based on performance under actual operating conditions, industry has put its O.K. on Walworth Steel Valves?

Tough . . . wear resistant . . . dependable, these valves are produced in gate and globe types, in sizes to cover practically every service requirement. They are excellent examples of Walworth leadership . . . leadership that has made the Walworth valves famous throughout the world.

Walworth Catalog 42 gives complete information regarding Steel Valves as well as the full line of Walworth valves and fittings in bronze and iron. Your copy may be obtained upon request. Whenever you need valves — whether steel, bronze or iron — remember Walworth for dependability, economy, and long service life.

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Paper Industry Meets With Packaging Experts

(Continued from page 7)

to demonstrate the effectiveness of the methods outlined.

F. V. Powell, president, Lindley Box & Paper Company, speaking on "Folding Cartons", referred to the "giant packaging industry" of 450 plants, employing around 20,000 people with a production of about 350 million annually. He then stressed the strategic importance of the paper folding box as a protection to contents and an enhancer of sales value. He outlined reasons why this type of container simplified handling, making it more convenient for manufacturer, distributor retailer and consumer; stressed ways in which this type of packaging permitted the manufacturer to carry his name to the ultimate user and giving him a direct tie-in with his advertising. He added that such a method "protects the consumer against inferior substitutes as he well knows a packaged article must be uniform and as represented."

The speaker outlined how the details of a new container are worked out with the advertising department to insure proper selling arguments. "Progress," said Mr. Powell, "is the making of things easier. Packaging is progress-making it easier for the manufacturer and wholesaler-easier and educational for the retailer and the consumer as the article is not only conveniently and neatly packaged for handling but pictured and instructed as to how to be used".

G. S. Denning, vice president in charge of sales of the W. C. Ritchie & Company, speaking on "Set-up Boxes," gave his interested audience a real definition of what constitutes a "set-up box", using a sample of a typical inexpensive set-up box in various stages of processing. He outlined the processes, the scored blank, the blank corner cut, the staying operations and the covering. "From this very simple type of set-up box", Mr. Denning said, "we vary our production to include almost any size or shape within practical limits."

Mr. Denning then illustrated the slide box, made on fast automatic machines and also illustrated the round box used for face powder.

He pointed out that the latest addition to the set-up box field is the transparent package made from rigid sheeting, either cellulose acetate or ethyl cellulose. He added that this type of package may be an all-transparent box combined with conventional set-up box parts if desired.

"What should your package have?", Mr. Denning asked. "It should have quality. Don't try to save a few pennies and sacrifice quality. Plan your package so that it is convenient to handle, easy to display, dispenses your product readily, is of the proper unit cost. Above all, make it a selling package—in short, one that has eye appeal. The set-up box will continue to fill the needs of industry and probably on an increasing scale because per capita usage is steadily increasing. New developments will come slowly which will include new materials, new and better machinery and new improved methods. As to selling prices, do not expect any return to 1939 figures. Your package costs are higher and will remain much higher than 1939 in the foreseeable future".

C. B. McClain, vice president, Atlas Box Makers, Inc., speaking on April 29 on "Ultimate Uses and Protection Afforded", estimated that with new machines coming into use in the latter part of 1947, the board industry will be producing over ten million tons a year, practically double the amount of board produced before the war. Mr. McClain pointed out that during 1936 to 1940, the board mills of America turned out an average of 5,400,000 tons of board a year; increased production by some 40 per cent during the war years and now, in the first post-war year, are producing 8,100,000 tons annually.

Mr. McClain indicated that he expected a temporary readjustment period to be felt late in 1947 and extending into part of 1948.

"However", he said, "I believe this readjustment will be short-lived. I expect the greatest single development in the carton industry will probably come from the packaging of fresh produce with the accent on better protection plus visibility." He added that "with the plans in the offing, I personally do not worry much about what is going to happen to our industry. I can remember a good many years ago when the automobile industry was young though it had reached the saturation point when it finally reached the peak of a million cars a year!"

W. F. Gillespie, Mill Division, Gaylord Container Corporation, speaking April 30 on "New Materials for Better Boxes", confined his discussion to (1) Boards-Liner and Corrugated Boards (2) Treatment of These Boards and (3) Adhesives. The speaker outlined the fibrous material content in boards, the pulping methods and board possibilities, stating that the introduction of the secondary headbox in the manufacturer of Fourdrinier liners has given a flexibility to the Fourdrinier sheet that it did not have five years ago.

Mr. Gillespie said that with strong kraft base "we may expect lined sheets with excellent finish hardwood pulps on the surface and this can be expanded so that bleached lined Fourdrinier stock can be made and, extending into the colored liner field, goods colors can be produced at much less cost than the conventional beater treatment". He added that a wide variety of other specialized surface treatments become available in a Fourdrinier sheet.

The Gaylord executive listed requirements of boards for corrugated and solid fibre boxes, touching on resistance stiffness, tear, wet strength, thermoplastic and pressure sensitive seals and finish. He also, in a technical but interesting presentation, outlined standard methods of producing desired properties; materials available for treatment of boxboards and methods of treatment to attain desired properties.

W. M. Lincoln, Jr., Technical Manager, Inland Container Corporation, speaking on "The Importance of Specialized Study of Packaging Requirements", warned that the packing problem is not universally recognized and expressed amazement at the failure of industrial managers, engineers, authors and educators generally, to show any awareness of the problem. He outlined packaging's place in industrial organization and warned that there must be "much more specialized study of the detailed packaging requirements of individual products at the time of their conception rather than after they are born". He said this demanded actual union or the closest possible liaison between product engineering and packaging engineering.

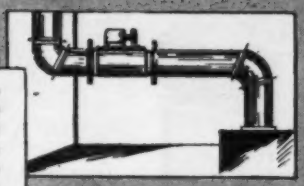
"In all too many instances", Mr. Lincoln pointed out "the preparation of goods for shipment does not receive the attention from management that it deserves. Frequently the really difficult problems would have never existed if the product design function had had a proper knowledge and appreciation of the demands of packing and shipping and acted accordingly. Where the packaging engineer is installed on the staff of the general engineering department like any other specialist required to handle certain aspects of design problems, he will assume his rightful place alongside the lubrication engineer, the metallurgist and other highly specialized branches of engineering."

E. A. Throckmorton, President, Container Laboratories, Inc., speaking on "How to Use a Box Testing Laboratory", stated that the ideal test is "to determine what the package will do under field conditions in the normal course of distribution and trade". He warned, however, that "it takes a long time to go through the motions of all these actual shipments and that package laboratories have been devised as a short cut. The second objective, he said, is to be able to subject packages or boxes to situations which "simulate shipping conditions and to do so under circumstances that permit the observer to see what is going on".

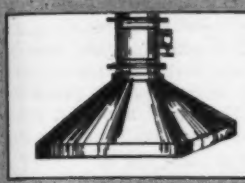
Mr. Throckmorton outlined the limitations of such testing procedures, pointing out that fibre containers are not identical products, varying by groups and kinds but also by individual containers from the same manufacturing run. "Similarly", the speaker pointed out "corrugated boxes are not fabricated exactly alike" stressing the point that one must have enough samples of board or of a certain kind of box to be sure the test results that "you obtain upon these specimens have any significant meaning". He added that "variations in results never can be less than the actual variations in the specimens being tested".

AXIAL FLOW FANS-

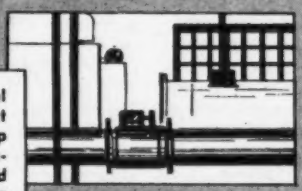
WHEN TO USE THEM TO ADVANTAGE



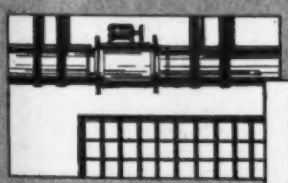
WHEN the fan fits naturally into the middle of a straight duct system. Here the Axial Flow type is installed with the least disturbance, and to special advantage when the system is overhead.



WHEN a vertical air removing system is used — as in exhausting from a hood or paint spray booth—the Axial Flow Fan can be set directly over the opening with the duct straight up.



WHEN space is limited Axial Flow Fans take all straight connections (which take up the least room)—while Centrifugal fans require curved connections, which take up valuable room.



WHEN you have a fan-supporting problem, but still need high air volume. Axial Flows are lighter and smaller than Centrifugals—are more easily supported from ceilings or walls.

Axial Flow Fans fit very well into many industrial and commercial applications where space-saving is important, where an expensive platform can be eliminated, and where straight-line air flow is desirable.

In other cases, they offer no real advantages over Centrifugals and for that reason, Buffalo offers both types.

Bulletin 3533-B gives full details and ratings on Axial Flow Fans. Bulletin 3339 gives the same information on Type LL Centrifugal Fans. Write for copies of both for your files.

BUFFALO FORGE COMPANY

159 MORTIMER STREET BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo"

AXIAL FLOW FANS

CENTRIFUGAL FANS

Homelite Produces Electric Chain Saw

PORT CHESTER, N. Y.—A new one-man, high-cycle electric chain saw has been placed on the market by the Homelite Corporation. Weighing only 27 pounds, complete, this new chain saw is designed to be handled easily by one man, for felling, limbing or bucking trees or for accurately cutting timbers up to 20 inches. Its small size and light weight permit this saw to be used in a tree for limbing—or in other locations inaccessible to bulkier or heavier saws. It may be used for cuts at any angle.

The electric power for the saw is furnished by a Homelite high-cycle generator, driven by an integral gasoline engine — a compact lightweight generator which can be carried to any location. Homelite carryable 180-cycle generators are available in two sizes. The Model 24A230/180 has a rated capacity of 2500 watts, and weighs only 129 pounds complete with engine. The Model 25A230/180 has a rated capacity of 5000 watts, and weighs only 171 pounds. The Model 24A230/-180 generator operates one high-cycle chain saw and the Model 25A230/180 generator will operate two. Either generator can be used to operate other types of high-cycle electric tools, such as drills, nut runners or grinders. The generator requires no manual attention during operation; an integral governor automatically controls the engine speed from no load to full load.

The high-cycle motor driving the chain saw is a 2½ horsepower, 180-cycle 3-phase electric motor with a grounded connection. There are no brushes to replace, no commutator to clean. Sealed ball bearings support the motor shaft and sprocket shaft. Pressure lubrication is provided for all moving parts, including gears and saw chain. If two-man operation is desired, a helper handle can be attached to the end of the saw opposite the motor.

Mathieson Gets Permits For Plant Addition

NIAGARA FALLS, N. Y.—The Mathieson Alkali Works has been granted two building permits covering the construction of a storage building and a factory extension, both in the south side of Buffalo Avenue. The storage building will contain 65,500 cubic feet and will cost $14,000. The factory extension will contain 20,000 cubic feet and will cost $10,000.

Stearns Issues Clutch Booklet

MILWAUKEE—A new 20-page catalog No. 226 on magnetic clutches and clutch-brake units has been prepared by Stearns Magnetic Manufacturing Company, manufacturer of magnetic equipment, including magnetic brakes, separators, pulleys and lifting magnets.

Homelite's chain saw tackles heavy timber

The new catalog is a complete text book on magnetic clutch application and contains specifications, illustrations, torque formulae and other valuable information on magnetic friction device control.

Dixie Cup Company Pushing Plant Expansion Program

EASTON, Pa.—Showing its confidence in the ability of the paper and pulp industries to meet future requirements, the Dixie Cup Company is going ahead rapidly with a construction program that will provide a major new outlet for paper mill output. The present general supply situation is a passing one, according to President J. E. McGiffert, and the tremendous demand for drinking cups and food containers will provide a most welcome expanded market for the paper industry.

The Dixie plant at Easton has recently been enlarged about 25 per cent by the addition of a new, modern four story wing. This new addition contains more than 100,000 square feet of floor space, to be used mainly for manufacturing purposes, with other areas set aside for storage, shipping, and special development work.

Will Ship Swedish Pulp Direct To Great Lakes

NEW YORK—Booking of the Laholm, first direct steamer to carry Swedish woodpulp from the Baltic to Great Lake ports this year, has just been completed by the Cellulose Sales Company. The Laholm is one of two smaller vessels, owned by the Swedish American Line, capable of carrying up to 1500 tons of pulp for direct passage from Sweden to such Lake Michigan ports as South Haven and Green Bay.

It is expected that during the coming shipping season several similar movements of woodpulp to paper mills located near Great Lake ports in the mid-west will compete with the higher all-rail cost via Atlantic Seaboard ports.

Allis-Chalmers Ups Pay Rate 11½ Cents

MILWAUKEE—In line with the national trend, the Allis-Chalmers Mfg. Co. May 1 placed in effect a wage increase of 11½ cents an hour and six paid holidays for all hourly wage employes not covered by collective bargaining agencies at the West Allis Works, it was announced by Walter Geist, president.

Geist said that adjustments were also made for non-represented salaried employes and that simultaneously in all the company's plants a similar offer was made to AFL, CIO, and independent unions holding collective bargaining contracts with the company.

The new rates affecting the company's 27,000 employes at its eight plants increases the company's payroll approximately $7,000,000 annually.

Inasmuch as the production workers at the West Allis plant are not represented by a certified collective bargaining agent following the termination of an eleven-month strike, nearly 10,000 shop employes will receive the wage increase immediately. At the same time, nearly 5,000 West Allis salaried employes will receive salary increases of $20 a month.

Meanwhile, the company made the new offer May 1 at the West Allis Works to the AFL International Brotherhood of Electrical Workers, the AFL Firemen and Oilers, and the Independent Engineer's and Draftsmen's Association, which represents various groups of employes at the West Allis Works.

At the same time, the company sent a letter to six unions which are seeking bargaining rights for various groups of employes at the West Allis Works. The letter to these organizations said:

"In view of the fact that the production employes at our West Allis Works have no exclusive bargaining agent at this time, we have decided in fairness to these employes to make this wage offer effective for them today.

"This action does not restrict in any way the rights of the exclusive bargaining agency of these employes when such agency has been lawfully selected by them."

The unions receiving this letter were Local 248, UAW-CIO, Independent Workers of Allis-Chalmers (unaffiliated), the UAW-AFL, Local 125 of the AFL Firemen and Oilers, the AFL Patternmaker's League of North America and "The Committee."

The holidays for which hourly workers will be paid at West Allis are Memorial Day, Fourth of July, Labor Day, Thanksgiving, Christmas and New Years.

Allis-Chalmers offered similar hourly wage increases and holiday pay to unions with contracts at the company's other plants which are located at Boston, Mass.; Pittsburgh, Pa.; Norwood, O.; La Porte, Ind.; Springfield, Ill.; La Crosse, Wis.; and Oxnard, Calif.

Warns High Prices Hinder Production

KAUKAUNA, Wis. — One hundred ninety delegates from northern Michigan, Minnesota and Wisconsin attended the Tri-State District Council meeting of pulp, sulphite, papermakers and converters unions here April 26 and 27.

Representing industry at the program Sunday evening was C. R. Seaborne, vice-president and general manager of the Thilmany Pulp and Paper Company. He used statistics to show the rising demands of production, and industry's efforts in filling them.

"In order to benefit all, management and labor must work together," he said, "in order to meet the demands of the market and share the remuneration of their combined efforts." He pointed out that an era of prosperity for all is dependent on the democratic way in which business can get a foothold in the postwar era.

Short talks were also given by L. C. Smith, director of industrial relations at the Thilmany mill; G. D. Muggleton, vice-president of the Combined Locks Paper Company, and L. F. Nelson, president and general manager of the Badger Tissue Mills.

The principal speaker for labor was Walter Trautman, Milwaukee, international representative of the Pulp, Sulphite and Papermill Workers. He decried legislative trends in the present congress and in the state legislature toward the regulation of labor unions. He said there is a strong demand for all manner of goods, but that there is a problem of continuing a high level of production in the face of severe price rises. Unless there is a proper relationship between purchasing power and price, he asserted, "we are in serious danger of destroying any semblance of prosperity, and thus bring on a recession, depression or crisis."

Wisconsin Valley Traffic Club Planned by Fall

WISCONSIN RAPIDS, Wis. — Transportation men made plans at a meeting April 28 for the formation of the Wisconsin Valley Traffic Club. The organization is expected to be completed at the next meeting, which probably will be held late next fall.

Truck lines, railways and industries were represented at the meeting, which was attended by 110 persons. John W. Kachel of the Consolidated Water Power and Paper Company was named temporary secretary.

The club seeks to bring about a better understanding by the public of transportation problems; to bring into closer relations the shippers and those engaged in the transportation of freight and passengers.

Irwin Pearson, Neenah, former secretary of the Wisconsin Paper Group, was the principal speaker.

ROSS ENGINEERS GATHER IN NEW YORK FOR SALES CONFERENCE

More than one hundred sales engineers from United States and Canadian offices and plants of the J. O. Ross Engineering Corporation were present recently for the firm's Annual Sales Conference held at Roosevelt Hotel, New York. Many of the new air systems being planned for improved processing operations in major industries, such as pulp and paper, textiles, food, metal working, and others, were explained.

Demmon Reports on Lake State Forests

MILWAUKEE, Wis.—E. L. Demmon, director of the Lake States Forest Experiment Station, in a report on the station's work, said that the forest resources of these states have been heavily overcut to meet wartime needs, and now face the threat of a continued drain in the urgent peacetime demand for pulp and paper lumber. Unless cutting is guided by good forest practices, the damage may be felt for generations to come.

Because Wisconsin has a huge pulp and paper industry and 1,000 sawmills, the state has a large stake in forestry work which will assure a continued supply, Demmon said.

He commended the work of the Nekoosa-Edwards Paper Co. at Port Edwards as an outstanding example of a timber consuming corporation assuring itself a growing supply of raw material. The company owns about 110,000 acres of jack pine and cutover lands supporting second growth pine, spruce, balsam, aspen and birch.

Demmon said that during the last 10 years cutting for pulpwood has accounted for about 20 percent of the forest commodity drain in the three states but that by 1944 it had reached 26 percent. The three states now have 131 paper and paperboard mills, 39 of them operating in conjunction with pulp mills. The region produces about one-sixth of the nation's paper output, much of it of high quality.

The pulp and paper industry in the three states is strategically located with regard to markets, Demmon added.

"If sufficient attention is given to the problem of providing for its wood needs," he asserted, "the lakes states industry can be maintained indefinitely and may even expand. The forest must be treated as a renewable resource, rather than as a mine.

"The 50,000,000 acres of commercial forest land can meet the requirements of accessibility, productivity and cheapness to reproduce, if handled under proper management. The rapid forest growth rates in the south and west are offset by higher freight charges to national markets. Under normal conditions of competition the the pulp and paper industry of the lakes states has as good, if not better, opportunities for permanent and sustained production as those of any other region. Forestry is essential if continuous production is to be achieved."

Wisconsin Acreage Needs Reforestation

MERRILL, Wis. — Wisconsin has 4,500,000 acres in need of reforestation now, according to an estimate given to Trees for Tomorrow, Inc., by Paul O. Rudolf of the Lake States Forest Experiment Station at St. Paul, Minn.

The estimate indicated that there are 5,000,000 acres of "deforested" land in the state, but that only about 2,000,000 acres are regarded as suitable for economical reforestation. There are almost 2,000,000 acres of aspen land outside of the deforested areas, on former pine sites. This aspen usually becomes defective before reaching merchantable size in commercial quantities, Trees for Tomorrow, a reforestation organization supported by Wisconsin River Valley pulp and paper manufacturers, pointed out.

About half of that acreage is in sapling or pole-sized stands, which are too expensive to be practicable for conversion by present methods. Thus there are about 1,000,000 acres suitable for conversion planting in the state at present.

ASA Scans Standards For Frozen Food Packs

NEW YORK—Representatives of more than forty trade and technical bodies and government agencies interested in the packaging and handling of frozen foods will meet May 13 at the offices of the American Standards Association, 70 E. 45th Street, in the initial move to consider national voluntary standards for the packing of frozen foods and the relation of such work to international proposals in this field.

The meeting is expected to advise the ASA as to the desirability of international standardization work in the packaging of frozen foods under the International Organization for Standardization (ISO), and also the degree of American participation in such work, if undertaken. The first official meeting of the ISO will be held in Zurich, Switzerland, June 17-18. The frozen foods packaging project was originally suggested by Norway. Mr. Ainsworth and Howard Coonley, chairman of the executive committee of the ASA and first president of ISO, are the American delegates.

The New York meeting will include representatives of frozen foods packers, packaging equipment and materials makers.

PAPER EXPORT

IS A FULL TIME JOB!*

AND OUR ORGANIZATION IS GEARED TO DO THE JOB

For over 40 years the name *de Vries* has been associated with paper among buyers in all world markets.

For over 40 years the name *de Vries* has been synonymous with the export sales of leading paper mills.

E. de Vries Company

PAPER EXPORTERS ALL OVER THE WORLD

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Cable address "Cellulose" New York

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OBITUARY

Edward L. Hall

BOSTON—Edward L. Hall, manager of the Whitcomb Division of the United States Envelope Company, Worcester, Mass., and associated with the company since 1912, died April 22 at the New England Baptist Hospital, Boston.

He was associated with the Dennison Manufacturing Company before going to United States Envelope Company sales department in 1912. He was made assistant manager of the Whitcomb Division in 1926 and a few years later became manager.

Mr. Hall was a member of Wesley Methodist Church, Worcester; Morning Star Lodge, F. and A. M., Worcester; Worcester County Commandery, K. T.; Worcester Economic Club and Worcester Advertising Club.

His wife, three brothers and three sisters are living. The funeral was held April 25 at Longstreet Colonial Chapel, Worcester.

Lewis Stone Greenleaf

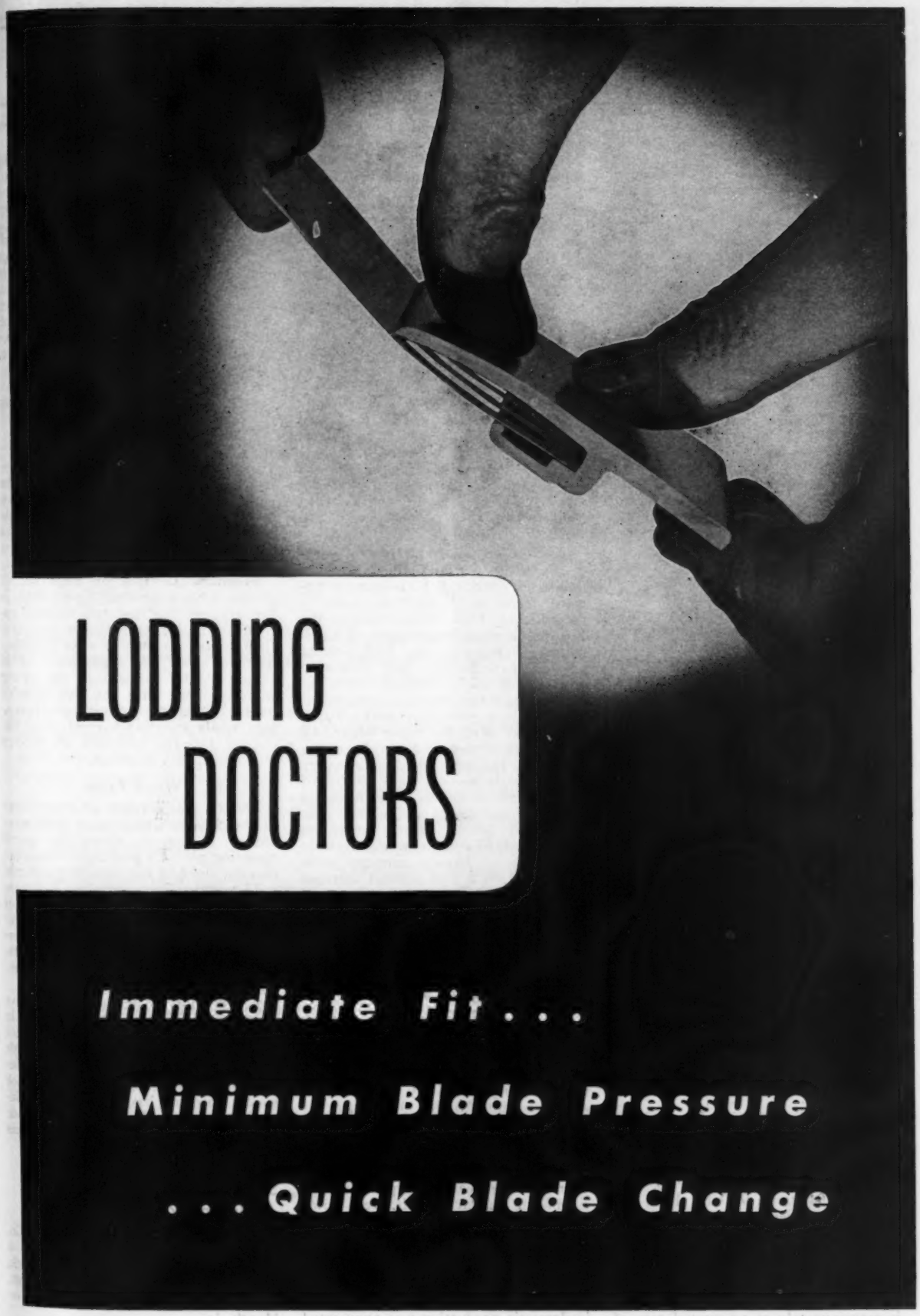
WATERVLIET, N. Y.—Lewis Stone Greenleaf, 73 years old, who retired several years ago as treasurer of the Wehr-Manning Co., died this week at his home in Loudonville following a brief illness. He was among the founders of the original Manning Abrasive Co. in the early part of the century. Born at Lenox, Mass., in 1874, he migrated to Albany soon after his graduation from Massachusetts Institute of Technology in 1894. He retired as treasurer of Albany Hospital several years ago. He also had served as president of the board of the Albany Medical College, president of the Albany Community Chest and chairman of the Albany Red Cross disaster relief committee. His wife and two sons are the principal survivors.

William Giesbers

APPLETON, Wis.—William Giesbers, a pioneer resident of Outagamie County and a veteran of 35 years service with Kimberly-Clark Corporation, died at the age of 92 April 28, at the home of his daughter, Mrs. William Murphy, after a week's illness. He was born in Little Chute September 10, 1854.

Florimond Comyne

MARINETTE, Wis. — Florimond Comyne, 44, died April 28 after an illness of a week. He was a supervisor in the converting plant of the Scott Paper Company and a lifetime employe.


LODDING
DOCTORS
Immediate Fit . . .
Minimum Blade Pressure
. . . Quick Blade Change

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 7, 1947.

Productive efficiency of domestic paper and paperboard mills is beginning to lighten the burden on consumer's pocketbooks. Improved techniques along with capacity operations are enabling manufacturers to hold down prices and even to lower them in some instances. Paper and board manufacturers are not only holding prices down, but are improving the quality of their products to give consumers more for their dollar. With costs materially higher than last year it is a healthy sign for the paper industry to be able to check prices and improve quality at the same time. While over-all production of paper and paperboard is greater than a year ago it is still insufficient to meet consumer demand, thus it can not be said that a buyer's market has brought about this trend. There still remains a large backlog of orders for many types of papers. Textbook, tissue, writing, kraft, wrapping and sanitary papers are reported in short supply in all sections of the country. Converters are not benefiting as much as integrated mills by the industry's continued high level of production. Some independent mills and converters are reported laying off employees or curtailing working hours because they are short on one or a combination of the following: paper, pulp, chemicals, adhesives and dyes. This situation will undoubtedly improve as mills increase their capacity. Biggest bottlenecks at the present time are machine manufacturers who have had to postpone delivery dates.

The index of general business activity for the week ended April 26 rose to 146.4 from 144.2 in the previous week, compared with 124.6 for the corresponding week in 1946. The index of paper board production rose to 178.4 from 174.7 in the previous week, compared with 154.7 for the corresponding week in 1946.

Paper production for the week ended April 26 was estimated at 103.1 per cent, compared with 105.9 for the preceding week, with 100.6 for the corresponding week in 1946, with 87.0 for 1945, with 89.8 for 1944, and with 85.8 per cent for the corresponding week in 1943.

Paperboard production for the week ended April 26 was 100.0 per cent of capacity, compared with 102.0 per cent for the preceding week, with 100.6 for the corresponding week in 1946, with 99.0 for 1945, with 98.0 for 1944, and with 89.0 per cent for the corresponding week in 1943.

In order to meet increased packaging demands the paper board industry will practically double its prewar production by 1948. Current production is approximately at an annual rate of 9,000,000 tons. Eleven new machines now under construction will add about 754,000 tons to total capacity. Five scheduled for the production of kraft board have an estimated capacity of some 520,000 tons a year. The remaining machines are designed to make other container grades as well as folding and set-up box board and have a combined annual capacity of about 234,000 tons. Other new machines planned should bring production up over the 10,000,000 ton mark by early 1948, which is practically double the amount of board produced before the war. . . . Seattle builders are supplying National Gypsum Company with enough paper to enable that company to go from a five to a six day week in return for extra wallboard and lath. The builders send 200 tons of paper a month to National Gypsum. The extra day's output returned to the Seattle men will give them an additional 1,500,000 feet of badly needed wallboard and lath each month.

Weekly earnings of production workers in the paper and allied products industries continued their general upward trend in January to reach a record level of $46.89, according to the Forests Section, Department of Commerce. Earnings were 13.9 percent greater than January last year, but only slightly above December 1946. Individual increases over the corresponding month a year ago were: Paper boxes, 16.1 percent; paper bags, 14.3 percent; envelopes, 14.3 percent; paper and pulp, 13.7 percent. . . . Average weekly hours worked have fluctuated from month to month with the trend toward fewer working hours. The paper and allied products industries averaged a 43.2 hour work week in January. . . . Hourly earnings were up to a $1.09, a 16.9 percent increase over January last year. . . . Rates of separations and accessions in the paper and allied products industries through January 1947 declined substantially below those of a year ago.

Wood Pulp

The country's over-all pulp stocks, on March 1, though 10,000 tons above the preceding month, registered a decline of just under 30 percent from the February inventory total a year ago, according to the Department of Commerce. Despite decreased consumption, unbleached sulphite inventories at the end of February were down 40 percent as compared with a year ago. Unbleached sulphate stocks, comparing similar periods, were down 46 percent chiefly due to a greater falling off from last year in imports from Northern Europe. Stocks of all grades of pulp were down from last year, with the single exception of bleached sulphate for which a substantial increase in domestic production was augmented by a relatively large gain in imports from Northern Europe.

Total United States production of wood pulp in the first two months of 1947 exceeded that of the same period a year ago by about 350,000 tons, or 22 percent, this substantial gain being accounted for by relatively low output in the South in the first two months of 1946 when weather conditions were very poor. An increase in the production of the sulphate pulps ran well ahead of the average rate indicating the enhanced position in the South's supply of pulpwood. February's total production maintained the same relative level as in January, allowance being made for the fewer working days.

Rags

Collections of old rags which were impeded during the early weeks of the year by inclement weather have shown recent improvement. Market for new cotton cuttings continues to exhibit a steady tone with mills adopting a selective attitude.

February receipts of rags of all grades were somewhat lower than in January, but the first two months' receipts were 10 percent over the same 1946 period. Consumption in February was on about the same level as in January, after adjustment for fewer working days, with the two month's total 23 percent over last year. Inventory totals were unchanged since the end of January, although 28 percent over those of a year ago.

Waste Paper

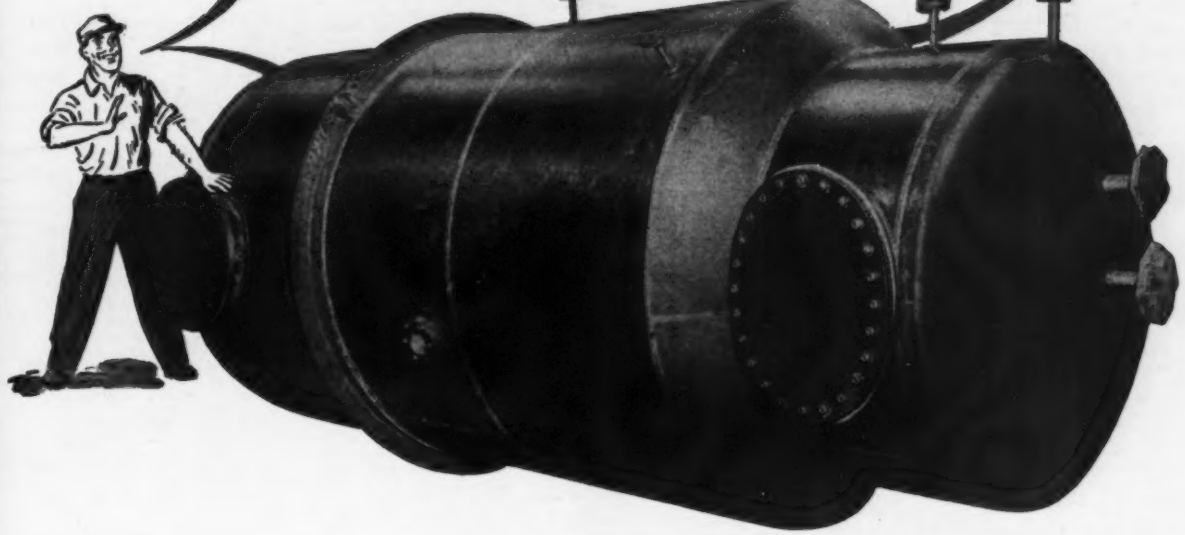
Countrywide receipts of waste paper in the first two months of 1947 were almost 10 percent above the corresponding period a year ago. Consumption for the first two months registered a 13 percent gain, with the February rate of increase slightly behind that of January. Inventories at the end of February, though approximately 7 percent less than the preceding month, were 45 percent greater than the country's stocks in February 1946.

Ample supplies of news stock have brought price drops for this grade in many sections of the country. Mixed papers are more plentiful but as a rule hold their own pricewise, the same being true of corrugated containers. Book stocks, however, have developed a relatively easy tone. Market for high grade waste paper remains strong with prices showing considerable variation.

S. D. Warren Votes Additional 25c Dividend

BOSTON, MASS.—S. D. Warren Co. has voted a dividend of 25 cents a share on the company's common stock, payable June 2. Previous payment, prior to a 4-for-1 split, was $1 on March 1.

Tall oil from this bubble tower brings over $60 a ton!



INCONEL BUBBLE TOWER *used by sulfate pulp mill for profitable recovery of fatty acids from black liquor. Inconel provides exceptional resistance to corrosion and high temperatures.* (Photo courtesy Alloy Fabricators, Inc., Perth Amboy, New Jersey.)

It's true! And kraft mills using the sulfate black liquor process are cashing in.

How?

By recovering tall oil—*which many once burned.* In the past 10 years, demand has rocketed the price of tall oil to many times its former level!

You, too, can turn this valuable by-product into extra revenue for your mill. Here's the method:

1. **Treat saponified fats and resins with sulfuric acid.**
2. **Recover free fatty acids by distillation.**

Fatty acids, of course, are corrosive. And high temperatures must also be considered in selecting materials for construction of your distilling apparatus.

But you don't have to work out those problems!

You can be guided by the hard-earned experience of the chemical industry. For fatty acid distillation equipment, they use Inconel*.

This 80 Nickel-14 chromium alloy is highly resistant to corrosion by mixed fatty acids. It has great strength and resistance to oxidation at elevated temperatures. And it does not scale or pit.

Send for free bulletin

More detailed information on the advantages of Inconel for tall oil recovery is contained in our Technical Bulletin C-3, ***Monel, Nickel and Inconel in Pulp and Paper Mills.*** If you haven't a copy of this helpful 40-page reference booklet, we'll be glad to send one at your request.

And whenever you'd like help in picking the right metal for any corrosive pulp or paper mill job, remember that Inco's Technical Staff is always ready to serve you. No fee or obligation. Just write and tell what the trouble is.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N. Y.

NICKEL (INCO TRADE MARK) **ALLOYS**

MONEL* • **"K"* MONEL** • **"S"* MONEL** • **"R"* MONEL** • **"KR"* MONEL** • **INCONEL*** • **NICKEL** • **"L"* NICKEL** • **"Z"* NICKEL**

*Reg. U.S. Pat. Off.

Inconel*

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$84.00	to	$90.00
Sheets	103.00	"	109.00

Kraft—per cwt.—Carload Quantities

Zone A, Delivered

40 lb. base weight

Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	1.35	to	1.65
Wh. No. 1 M. G.	1.35	"	1.65
Wh. No. 1½	1.20	"	1.45
Wh. No. 2	1.30	"	1.55
Wh. Anti-Tar	2.75	"	4.25
Kraft Unbl.	1.45	"	1.85
Manila No. 2	1.25	"	1.45

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	4.47	to	5.50
Bleached	6.50	"	—

Paper Towels—Per Case of 3750—Zone 1.

Wh. C. fold 11x13½	4.39	to	4.80
Br. Sgl. fold 10 in.	2.67	"	3.00
Br, M'tif'd 9½x14¾	3.78	"	4.15
Br. M'tif'd 9½x9¼	2.67	"	3.00

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News	*75.00	@	81.50
Chip	*73.00	"	77.50
Sgl. Mla. L1 Chip	*89.00	"	92.50
White Pat. Coated	*101.50	"	110.00
Kraft Liners 42 lb.	*84.00	"	95.00
Binders Boards	94.00	"	126.00

*Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, Assorted Items

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.75@$46.75	$40.90@$48.00
100% Rag	32.85 " 38.50	34.00 " 40.00
85% Rag	.... "	30.55 " 38.75
75% Rag	24.30 " 28.50	24.45 " 30.00
65% Rag	.... "	.... " ....
50% Rag	20.05 " 24.50	21.25 " 25.75
25% Rag	17.85 " 21.75	19.00 " 23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items

	Bonds	Ledgers
No. 1	$12.00@$14.50	$13.15@$16.00
No. 2	11.25 " 13.75	12.25 " 15.00
No. 3	.... "	.... " ....
No. 4	10.60 " 13.00	11.75 " 14.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper

No. 1 Glossy Coated	$14.70@$16.75
No. 2 Glossy Coated	13.75 " 15.50
No. 3 Glossy Coated	13.20 " 16.00
No. 4 Glossy Coated	12.80 " 14.50
No. 1 Antique (Watermarked)	11.35 " 12.75
No. 2 Offset	10.65 " 12.25
A Grade E. F.	10.60 " 12.00
A Grade S. & S. C.	11.00 " 12.50
B Grade E. F.	10.30 " 11.75
B Grade S. C.	10.70 " 12.25
C Grade E. F.	10.00 " 11.50
C Grade S. C.	10.40 " 12.00
D Grade E. F.	9.70 " 11.00
D Grade S. & S. C.	10.10 " 11.50

Ivory & India at $.50 cwt. extra.

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite	117.00 " —
Bleached Sulphite	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft	112.50 " 120.00
Southern Kraft	90.00 " 102.50

Canadian mill Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	115.00 " —
Unbleached Sulphite	115.00 " —
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	105.00 " 115.00
Groundwood	75.00 " 80.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations

Ex. dock, New York

	Per Short ADT
Bleached Kraft	$150.00 to 156.00
Bleached Sulphite	151.00 " 158.50
Unbleached Sulphite	121.00 " 131.00
Unbleached Kraft	116.00 " 126.00

Finnish Quotations

Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50	to	$12.00
Light Silesias	7.50		
Unbleached Muslin	11.50	"	12.00
White Back Blue Overalls	8.25		
Blue Overalls	7.75		
Unbl. Fancy Shirt	4.50	"	5.00
Light Percales	5.50	"	6.00
Light Prints	5.25	"	5.95
Washables	4.00		
Bleachable Khaki	5.50	"	6.00
Unbleachable Khaki	5.00	"	5.50
Cottonades	4.50	"	5.00

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.00
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	2.20
No. 2 Roofing Rags	2.10
No. 3 Jute Bagging	2.00
No. 4 Brussels and hard back carpets	2.00
No. 5A Roofing Rags	2.00

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.		
New Dark Cuttings	$6.00	to	—
New Mixed Cuttings	6.50	"	—
Light Silesias	9.00	"	10.00
Light Flannelettes	8.00	"	9.00
New White Cuttings	13.00	"	15.00
Fancy Shirt Cuttings	9.00	"	10.00
Light Prints	8.00	"	10.00
Bleachable Khaki, No. 1	7.00	"	7.50
Unbl. Khaki, No. 1	6.25	"	6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.		
No. 1 White Linens	$14.00	to	16.00
No. 2 White Linens	12.00	"	13.00
No. 3 White Linens	8.00	"	9.00
No. 4 White Linens	8.00	"	9.00
No. 1 White Cottons	10.00	"	12.00
No. 2 White Cottons	8.00	"	9.00
No. 3 White Cottons	6.50	"	7.00
No. 4 White Cottons	5.00	"	5.50
Extra Light Prints	7.50	"	8.00
No. 1 New Light Prints	6.25	"	6.75
Med. Light Prints	5.25	"	5.75
Dutch Blue Cottons	5.25	"	5.50
Checks and Blues	4.00	"	4.25
Linsey Garments	4.50	"	5.00
Dark Cottons	3.75	"	4.00
Old Shopperies	3.25	"	3.50
New Shopperies	3.25	"	3.50

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.		
Foreign Gunny, No. 1	$4.75	to	5.00
Domestic Gunny, No. 1	4.25	"	4.50
Light Wool Tares	4.50	"	4.75
Heavy Wool Tares	4.75	"	5.00
Bright Bagging	4.25	"	4.50
Foreign Manila Rope	6.00	"	7.00
Domestic Manila Rope	5.75	"	6.50
Jute Strings	4.50	"	5.00
No. 1 Sisal Strings	5.50	"	6.00
Mixed Strings	1.75	"	2.50

Waste Paper

Prices to Mills

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$120.00
No. 1 Hard White Envelope Cuts	90.00	"	100.00
No. 1 Hard White Shavings, unruled	100.00	"	110.00
No. 1 Hard White Shavings, ruled	80.00	"	90.00
Soft White Shavings, one cut	95.00	"	105.00
No. 1 Soft White Shavings	85.00	"	95.00
Soft White Shavings, Misc.	65.00	"	75.00
No. 1 Fly Leaf Shavings	55.00	"	60.00
No. 2 Fly Leaf Shavings	50.00	"	55.00
No. 1 Groundwood Fly Leaf Shavings	30.00	"	33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)		
Mixed Colored Shavings	(nominal)		
Mixed Groundwood Colored Shavings	(nominal)		
Overissue Magazines	(nominal)		
No. 1 Heavy Books & Magazines	40.00	"	45.00
Mixed Books	22.00	"	25.00
No. 1 White Ledger	70.00	"	80.00
No. 2 Mixed Ledger, colored	60.00	"	70.00
New Manila Envelope Cuttings, one cut	100.00	"	110.00
New Manila Envelope Cuttings	65.00	"	75.00
Extra Manilas	40.00	"	45.00
Mixed Kraft, Env. & Bag Cuttings	75.00	"	85.00
Kraft Envelope Cuttings	100.00	"	105.00
Triple Sorted, No. 1 Brown Soft Kraft	60.00	"	70.00
New 100% Kraft Corrugated Cuttings	70.00	"	75.00
No. 1 Assorted Old Kraft	40.00	"	50.00
New Jute Corrugated Cuttings	27.00	"	—
Old 100% Kraft Corrugated Containers	(nominal)		
No. 1 News	26.00	"	27.00
No. 1 Mixed Paper	19.00	"	21.00
Box Board Cuttings	23.00	"	—
White Blank News	75.00	"	80.00
Overissue News	(nominal)		
Old Corrugated	28.00	"	30.00
Mill Wrappers	22.00	"	25.00

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—			
Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—

(Hard Fiber)

Mex. Sisal	.21	"	.24
Manila	.33	"	—

(Hemp)

Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—			
New White No. 1	.10½	@	.11
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07¼	"	.08
Cottons—According to grades—			
Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.05½	"	.06
Bleachable Cotton Cuttings	.06½	"	.07
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—			
Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—			
Foreign No. 1	nominal		
Domestic No. 1	2.00	"	2.05
Domestic No. 2	1.90	"	1.95
Roofing Bagging	1.90	"	1.95
Old Manila Rope	5.75	"	6.00

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

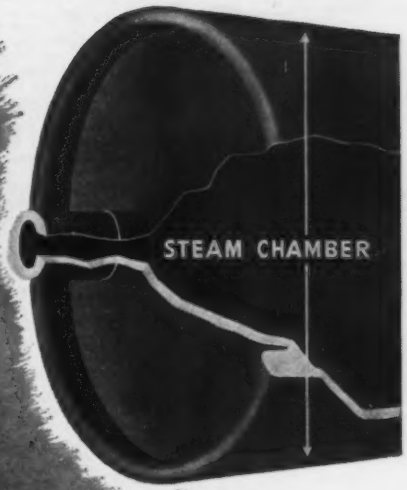
White No. 1—Repacked	4.50	@	5.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—			
Foreign	nominal		
Domestic	4.25	@	4.50
No. 1 Clean Bright—Sisal Strings	.04	"	.04½
No. 2 Clean Bright—Sisal Strings	.03	"	.03½
Sisal Jute	.02¾	"	.03
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.85

DOUBLE SHELL *vs.* SINGLE SHELL



Lukenweld

Patents applied for.

JACKETED

DRIER ROLLS* *for more production*

In contrast to the conventional single shell roll, the Lukenweld Jacketed Drier Roll has a shallow annular steam chamber, formed by inner and outer steel plate shells. This passage guides the steam in a restricted area, across the inside of the face.

Since steam velocity increases in direct proportion as cross-sectional area decreases, the steam velocity in Jacketed Rolls is much greater than in drum driers. This eliminates stagnancy and reduces film and entrapped air which retard heat flow.

In addition, the thinner, stronger steel plate walls are safe with steam pressures up to 350 psi and more. Weight is saved and power may be reduced. These and other advantages of the Lukenweld Jacketed Drier Roll speed up heat flow to yield more production.

Complete information on the Lukenweld Jacketed Drier Roll is in Bulletin 358. For a copy please write to Lukenweld, Inc., Division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pa.

*From 2 *ft.* to 18 *ft.* O. D. and over.

LUKENS

LUKENWELD DIVISION

★

DRIER ROLLS AND DRYING MACHINERY

Wool Tares, heavy...	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled..	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News..	60.00	"	65.00
Soft White Shavings.	80.00	"	—
No. 1 White Ledger.	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines..	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper..	20.00	"	—
Box Board Cuttings..	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled..	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper..	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings..	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers.	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads.	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches..	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging..	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.07	@	.07½
Fancy Percales	.07½	"	.08
New White No. 1..	.10	"	.11
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.07	"	.08
New Black Silesias..	.05	"	—
Red Cotton Cuttings.	.05	"	—
Soft Unbleached	.11	"	.12
Blue Cheviots	.07½	"	.08
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06	"	.07
O. D. Khaki	.07	"	—
Corduroy	.03½	"	—
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.10	"	.11

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A..	1.35	"	—
Quality B..	1.20	"	—
Quality C..	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled..	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger..	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News..	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	25.00	"	—
No. 1 Mixed Paper..	20.00	"	—
Old Corrugated	36.00	"	—
Mill Wrappers	22.00	"	—

MARKETS

BLANC FIXE—Demand steady, deliveries slow, supplies fair to good. Pulp is currently quoted at 55 per ton, in barrels, car lots, at works; the powder is quoted at $67.50 per ton car lots.

BLEACHING SUPPLIES—Supplies adequate to meet current demands. Shipments sometimes delayed. Quotations are unchanged. Prices on bleaching powder range from $2.75 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are reported around 32 to 36 cents per pound for domestic grades and 34 to 38c for Argentine grades f. o. b. shipping point.

CAUSTIC SODA—Demand continues to exceed output with little relief seen for domestic or export markets. Solid caustic soda is reported at $2.50 per 100 pounds; flaked and ground offered at $2.90 to $3 per 100 pounds, car lots, at works.

CHINA CLAY—Supply tight as demand continues heavy. Domestic filler clay is currently $8.50 to $9 per ton, car lots. Coating clay is $12 car lot and $16 less car lot. Imported clay is $49 to $52 per ton, car lot, export warehouse; $69 to $72 less lot for powdered.

CHLORINE — Buffalo output off as demand reaches new levels. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $3.50 per 100 pounds.

ROSIN—Gum rosin in drums, per 100 pounds, net, in yard New York, car lots, B, D, $10.80; E, F, G, H, I, K, M, $11.80; WG, $12.05; WW, $12.05. Wood Rosin, per 100 pounds, l. c. l., f. o. b. N. Y., B, $7.45; FF, $8.95; G, H, I, $10.25; WW, and X $10.45.

SALT CAKE—Supplies show little improvement as demand continues to increase. Prices remain unchanged. Domestic salt cake is quoted at $20.00 to $26 per ton in bulk. Chrome salt cake is quoted at $16 per ton.

SODA ASH—Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.08; in paper bags, $1.20; and in barrels, $1.60.

STARCH—Domestic demand absorb capacity production leaving little for export. Starch prices continue strong with the pearl grade quoted at $4.67 per 100 pounds; powdered starch at $4.78 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Fair supplies cover active demands. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f. o. b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds, in bags at works.

SULPHUR—Plentiful supplies to meet active domestic and export demands. Annual contracts are quoted at $16 per long ton, f. o. b. mines; the price f. o. b. at Gulf Ports is $17.50 per long ton.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

"MILL EMPLOYEES STRONG FOR TREATED FELTS"

"TONNAGE RECORDS BROKEN TWO MONTHS IN ROW"

An unexpected reaction to the use of ORR-CHEM felts crops up at a large Boxboard mill and the superintendent writes, "Employees recently placed on incentive basis and are naturally strong for treated felts."

Obviously, these workers, operating under an employee incentive plan, would be favorable to equipment that enables them to make more money.

For instance, mill recently broke all production records, the superintendent freely crediting two ORR-CHEM bottom felts with the gain. Having increased the use of ORR-CHEMS, the mill promptly set a still better record the following month and again gave ORR-CHEMS the credit.

This mill knows from experience that ORR-CHEMS start up well, drain well, require fewer wash-ups, last longer and, therefore, reduce felt cost per ton and increase the tonnage of the machine.

Perhaps you also operate under an employee incentive plan. If so, the experience of this Board mill with ORR-CHEMS should afford you and all other superintendents food for thought.

¶ When ordering your ORR-CHEM for trial be sure the dimensions are correct.

THE ORR FELT & BLANKET CO., PIQUA, OHIO

ORR-CHEM

IMPORTS

NEW YORK IMPORTS

WEEK ENDING MAY 3, 1947

SUMMARY

Newsprint	6503 rolls
Paperhangings	26 cs., 25 bls.
Wrapping Paper	1700 rolls
Fancy Paper	2 bls.
Miscellaneous Paper	1 cs.

NEWSPRINT

N. Y. Journal American, Markland, Liverpool, N. S., 622 rolls.
N. Y. Tribune, Inc., Markland, Liverpool, N. S., 1705 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 706 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 42 rolls.
Brooklyn Eagle, Inc., Markland, Liverpool, N. S., 507 rolls.
Washington Post, Markland, Liverpool, N. S., 2627 rolls.
Washington Daily News, Markland, Liverpool, N. S., 267 rolls.
Alexandria Gazette, Markland, Liverpool, N. S., 27 rolls.

PAPERHANGINGS

W. H. S. Lloyd & Co., America, Southampton, 26 cs., 25 bls.

WRAPPING PAPER

Clinton Paper Corp., Fort Townshend, St. Johns, N. F., 1700 rolls.

FANCY PAPER

Judson Sheldon Corp., America, Southampton, 2 bls.

MISCELLANEOUS PAPER

Stevens Nelson Paper Corp., Queen Elizabeth, Southampton, 1 cs.

RAGS, BAGGINGS, ETC.

(———), Augustana Victory, Antwerp, 350 bls. paperstock.
O'Brien Products, Inc., Stirlingville, Shanghai, 200 bls. cottonwaste.
Empire Fibre Co., Stirlingville, Shanghai, 100 bls. cottonwaste.
Lush Cotton Products Co., Stirlingville, Shanghai, 100 bls. cottonwaste.
Darmstadt Scott & Courtney, Mormactide, Rio de Janeiro, 124 bls. tares.
E. Butterworth & Co., Inc., Pierre Victory, Antwerp, 159 bls. old bagging.
Irving Trust Co., Sea King, Beirut, 157 bls. colored rags.
Manufacturers Trust Co., Sea King, Beirut, 81 bls. white rags.
Chase National Bank, A. Hamilton, Manchester, 42 bls. old bagging.
Amtorg Trading Corp., Vladivostock, Odessa, 354 bls. cottonwaste.
Star Woolen Co., Temple Arch, Montevideo, 8 bls. wool thread waste.

CHINA CLAY

R. T. French Co., Sacramento, Hull, 45 bags.

GLUESTOCK, ETC.

Darmstadt Scott & Courtney, Mormactide, Rio de Janeiro, 72 bls. dry gluestock.
John Gorvers, Santa Clara, Barranquilla, 20 bls. hidecuttings.
John Gorvers, Coastal Captain, Havana, 36 bls. gluestock; 24 bls. hidecuttings.
H. Remis, Santa Cecelia, Mollendo, 163 bls. gluestock.
H. Remis, Froste, Santos, 225 bls., 223 rolls gluestock.
Transatlantic Animal By-Products, Mormachawk, Santos, 600 bags boneglue.
John Gorvers, Santa Sofia, Barranquilla, 391 rolls gluestock.
H. Remis, Mormacdove, Rio de Janeiro, 244 bls. gluestock.

BOSTON IMPORTS

WEEK ENDING MAY 3, 1947

E. Butterworth & Co., Inc., Gainesville Victory, Antwerp, 54 bls. old bagging.
(———), Helgoy, Trondhjem, 1216 bls. kraft pulp.
Perkins Goodwin Co., Helgoy, Trondhjem, 4883 bls. half-prime bleachable sulphite pulp; 2179 bls. kraft pulp.
Elof Hansson, Inc., Rosa Thorden, Uddevalla, 549 bls. sulphite pulp.
H. Remis, Bowhill, Buenos Aires, 2865 bls. gluestock.
Green Textile Associates, Hoyanger, Santos, 178 bls. cottonwaste.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 3, 1947

Perkins Goodwin Co., Helgoy, Langstein, 2436 bls. half-prime bleachable sulphite pulp.
Price & Pierce, Ltd., Helgoy, Langstein, 5910 bls. dry chemical pulp.
Elof Hansson, Inc., Helgoy, Langstein, 12772 bls. kraft pulp; 1750 bls. dry sulphite pulp.
Perkins Goodwin Co., Helgoy, Langstein, 1585 bls. kraft pulp.

Holland Paper Becomes Hubbs & Howe Division

BUFFALO, N. Y.—The Hubbs & Howe Company announced that its wholly-owned subsidiary, the Holland Paper Company, has been renamed the Fine Paper Division of Hubbs & Howe. The parent company is a distributor of paper and kindred products. Holland Paper distributes fine paper used by printers and advertisers.

The Fine Paper Division will continue with its present personnel. Hubbs & Howe purchased the Holland Paper Company, which has been in operation more than 100 years, in 1942.

Blank Book Promotes Greiner To Head Western Plant

HOLYOKE, Mass.—Donald D. Greiner, personnel relations manager at the local plant of the National Blank Book Company since 1944, has been appointed Western Division plant manager with headquarters in Chicago.

He will be succeeded by Elbert G. Kjoller, former army officer, who has been associated with him for the past year. Greiner joined National in 1944 to supervise the coordinated personnel department.

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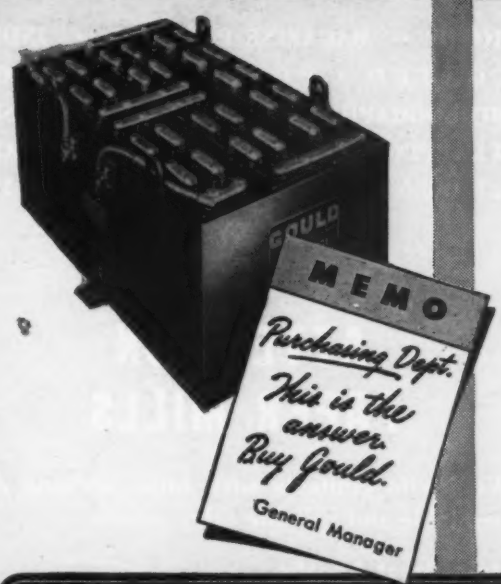

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ATTENTION
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DIGESTED

Work must offer an outlet for expressing and developing the natural creative urges. Man is not naturally a robot, but a creator. That fact distinguishes him from other animals. However, man's innate creative powers are neglected by our industrial system—and I include labor as well as management—except in some special instances like recently developed industrial research, where man's creative efforts are strictly channelized, regimented, and kept in a sort of cultural vacuum. Industry needs to move the inhibitions from creative work, to reach the pleasure of performing it on a physical level, and to encourage a transfer of this pleasure to a mental level in order to develop the workers themselves.

What are some of the other things that workers want from their work—aside from the economic security which they think they got? People like a sense of control, real or fancied. They like to control machines, processes, and other individuals directly or tangibly. More than anything else, they like to feel that they control or partially control their own destinies. It is indeed ironic that in no preceding culture has there been more opportunity for this than in an industrial world, which has neglected and even destroyed this desire in its people — *H. F. Willkie, from an address before the American Management Association.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
March 22	105.8	March 23	105.0
March 29	107.8	March 30	104.9
April 5	106.1	April 6	104.1
April 12	100.7	April 13	103.6
April 19 (Revised)	105.9	April 20	102.5
April 26	*103.1*	April 27	100.6

COMPARATIVE MONTHLY SUMMARIES

1946						1947	
Jan.	94.7	May	100.7	Oct.	106.4	Jan.	102.1
Feb.	98.4	June	104.6	Nov.	105.5	Feb.	105.9
Mar.	104.4	July	94.0	Dec.	97.0	Mar.	*106.1*
Apr.	102.7	Aug.	104.7				
		Sept.	101.3	Avg.	101.1		

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	85.3	90.9	102.7	88.6	88.2	88.3	99.7	*104.9*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
March 22	103	March 23	99
March 29	102	March 30	100
April 5	102	April 6	99
April 12	96	April 13	101
April 19	102	April 20	101
April 26	*100*	April 27	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	*101*										

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Newspapermen Sum Up

It is very easy to see the difficulties, but it is difficult to see the solution. To that statement of Col. James Hale Steinman, former director of the Printing and Publishing Division of the War Production Board, recently made before the American Newspaper Publishers Association, might be added another observation: it would be very easy to contrive a longer statement of conditions in the newsprint industry, but it would be difficult to sum up the situation more succinctly. From the paper industry's point of view that sentence carries the implication that though conditions are in no way satisfactory there is, at least, evidence that this industry has done, and is continuing to do, its level best.

If ever there were incentive to continuance of loyalties and fair dealing it is to be found in the attitude that the representative newspapers of the country have assumed during recent Senatorial investigations and current House committee hearings which have aired the complaints of those who complain that they cannot get enough paper; hence the government should take it all over and dole it out, preferably to privately printed publications. A summary of this attitude was prepared this week for submission to the House committee by William G. Chandler, himself a former WPB director of the printing and publishing division, and former president of the ANPA.

People are buying more newspapers, he showed, than in any previous year in history. Distress for lack of newsprint is relative. There are few, if any, publishers who could not increase profits if more paper were available, he testified. Then he went on to identify the distinction between publications of societies and unions which include the cost of publication in membership dues—and newspapers, daily and weekly, which depend for readership on voluntary selection and payment for individual copies.

The current cooperative plan which has as a result that no daily newspaper has had to suspend publication solely for lack of newsprint is due to the cooperative support and action by publishers, large and small, functioning through their national, regional, state and city associations. This record, he pointed out, would have been impossible without the cooperation of producers and distributors of the United States, Canada and Newfoundland who have foregone added profits from open market sales in order to implement the publishers' program.

Many publishers have been offered and some publishers have bought open market paper at fantastic prices, sometimes exceeding $200 per ton. There have been many more offers from irresponsible persons than actual newsprint bought and delivered.

The newspapers of the United States are now buying and using the largest tonnage of printing paper ever delivered in the United States. But, he pointed out that it is imperative to bear in mind that some 80 per cent of this estimated four million tons comes from the Dominion of Canada and Newfoundland, and that a restoration of Federal Government control and restriction of use would inevitably cause diversion at prices at least double those paid by USA publishers to other countries extremely short of printing paper.

Nor could Federal control within the United States be limited to newspapers alone. A considerable and increasing percentage of standard newsprint is used by periodicals and commercial printers. The flow of printing papers starts with the standing tree. After processing into pulp, it is used in most part for non-printing cellulose products, such as packaging and containers. This was the War Production Board program which no one could properly claim functioned with perfect efficiency or equity even with wartime powers and wartime self-sacrifice on the part of civilian users.

The speaker added that he saw prospect for a full balancing of supply and demand. Not one additional newsprint machine he declared, is projected for installation in the Dominion of Canada. One new machine on order for the Powell River Company, will replace an older machine. United States production in 1947 and 1948 he predicted may not equal 1946 production as two machines of the Maine Seaboard Paper Company at Bucksport, Maine, are leaving newsprint for magazine paper and the Crown-Zellerbach Paper Company will convert a part of their current newsprint production to magazine paper in Oregon.

Relief appears to be a long way off, at least two to four years, in the view of the newspaper speaker, and this presupposes that some measures be taken at once. Projected new capacity in Alabama is making slow headway; it involves a wartime munitions plant, which means that the ponderous machinery of war assets disposal must be put into motion. Alaska—there is a lot of timber growing there, and at least one Government agency is disposed to promote pulp and paper making in that area. But those facts alone do not make for a fulfilled promise. A newspaper publisher who also speaks from the vantage point of membership in Congress, has summed up a lot of difficulty in a few words. Says Edward H. Jenison, of Paris, Ill., "Investigations of legislative committees show Alaska to be a promising source. But it will require an investment of thirty million dollars, and there is the very large problem of transferring the public timberlands there. There is evidence that Alaskan citizens may hold up the sources of pulp supply."

W. L. Cook

EDITOR

Another *NEW* for Paper... LAUNDRY TAGS of Wet-Strength Paper

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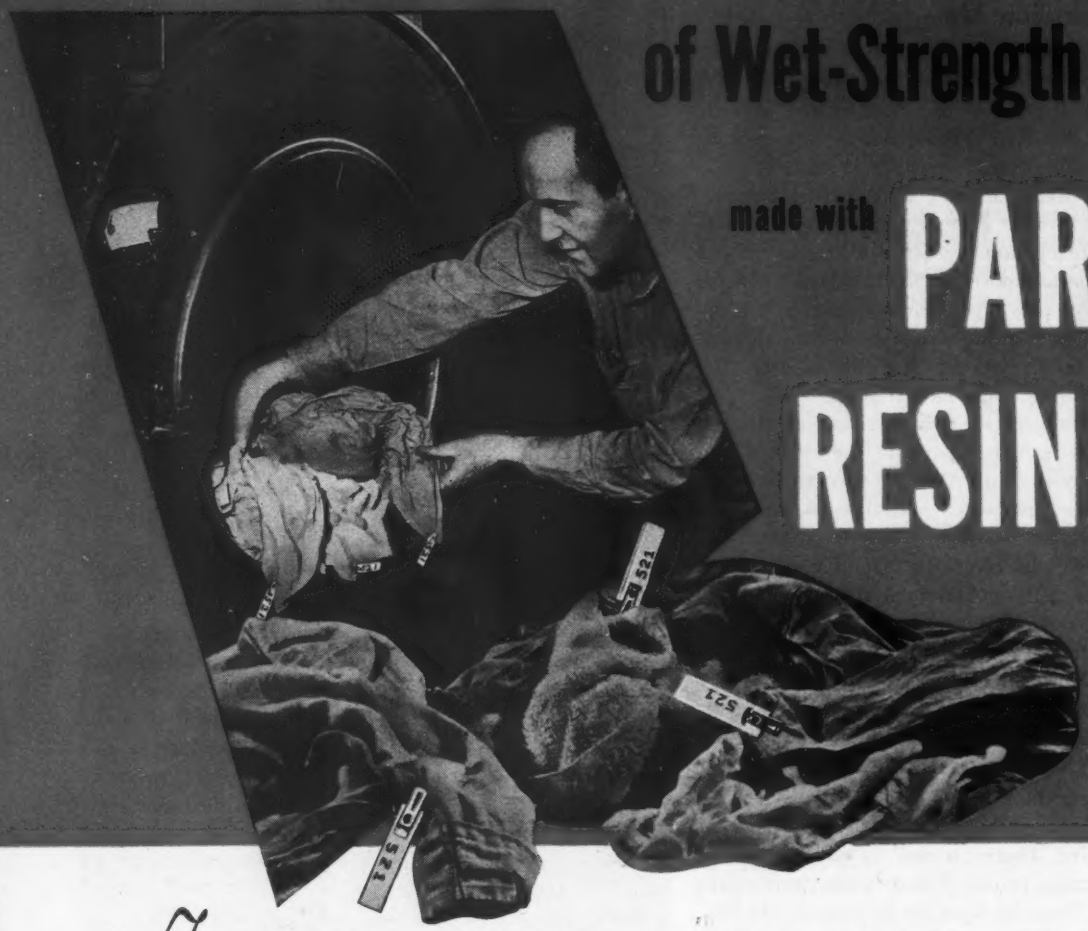

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Wet-strength papers made with PAREZ are steadily finding more markets. Already in wide use in the manufacture of absorbent papers, bag and sack papers, saturating papers, photographic papers, locker paper, twisting papers and wrappings, they are coming into the home in the form of durable wet-strength paper tablecloths and napkins . . . towels and draperies . . . dusting papers . . . in fact, wherever you want papers to remain strong and difficult to tear even when soaking wet. If your business is paper, paper products, or packaging, it will pay you to consult our technical service representatives. They'll be glad to work with you in improving your present products or devising new ones.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Quantitative Treatment of a Density Distribution Pattern on Photographic Paper as Produced by the Disturbance of a Spotlight Galvanometer*

By Geoffrey Beall[1]

Abstract

From each of a number of distributions of optical density, produced photographically and obtained in studies of flocculation, it was required to find a numerical constant to characterize various lots of pulp. The photograph was a strip along which reflectance progressively diminished for a time and then rose again. By converting to a complement of reflectance, the results for a given lot of pulp assumed the form of a frequency distribution for which the standard deviation was found as the numerical characteristic required.

In studies on papermaking, problems of uniformity arise and their treatment may be of general interest. The present account treats data that arose in the course of studies on deflocculation, as found in a number of aqueous pulp suspensions. In the first place, the experimental results were obtained in the form of an optical density record on photographic paper, where there was greater density in a central region and progressively diminishing density on either side. The photographic records for a graded series of pulps are shown in Fig. 1. It was required to find a simple numerical quantity to characterize each record and, hence, to characterize the lot of pulp represented.

The dilute suspension of pulp, under consideration, moved down a glass cylinder, in an apparatus designed by Wollwage *(1)* and further developed by the Department of Colloid Chemistry at The Institute of Paper Chemistry, so that flocs or agglomerate bundles of fiber disturbed a galvanometer by interfering with a transverse beam of light received in a photocell. The galvanometer played light on a strip of photographic paper. When the paper was later developed, density distribution patterns, like those shown in Fig. 1, were found. Subsequently, readings were made of the reflectance of the photographic paper (at intervals of 2 mm.), the results of a typical experiment being given in Table I. The consideration of this table is simplified if, instead of reflectance, darkening (the complement) is considered. To obtain values of darkening, it may be

TABLE I.—REFLECTANCE AND DARKENING OF A STRIP OF PHOTOGRAPHIC PAPER

Mm.	Reflectance	Darkening
2	21.0	0.5
4	18.0	3.5
6	17.5	4.0
8	11.5	10.0
10	7.0	14.5
12	6.0	15.5
14	5.0	16.5
16	5.0	16.5
18	4.5	17.0
20	4.0	17.5
22	4.0	17.5
24	4.0	17.5
26	4.0	17.5
28	5.0	16.5
30	6.0	15.5
32	6.5	15.0
34	8.0	13.5
36	9.5	12.0
38	21.5	0.0
40	21.5	0.0

TABLE II.—THE CALCULATION OF SPREAD, σ

Mm.	f	fx	fx^2
2	0.5	1.0	2.0
4	3.5	14.0	56.0
6	4.0	24.0	144.0
8	10.0	80.0	640.0
10	14.5	145.0	1450.0
12	15.5	186.0	2232.0
14	16.5	231.0	3234.0
16	16.5	264.0	4224.0
18	17.0	306.0	5508.0
20	17.5	350.0	7000.0
22	17.5	385.0	8470.0
24	17.5	420.0	10080.0
26	17.5	455.0	11830.0
28	16.5	462.0	12936.0
30	15.5	465.0	13950.0
32	15.0	480.0	15360.0
34	13.5	459.0	15606.0
36	12.0	432.0	15552.0
38	0.0	0.0	0.0
40	0.0	0.0	0.0
Total	240.5	5159.0	128,274.0

$$\sigma = \sqrt{\frac{(240.5)\,(128{,}274) - (5159.0)^2}{(240.5)^2}} = 8.56$$

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24 to 27, 1947.

[1] Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

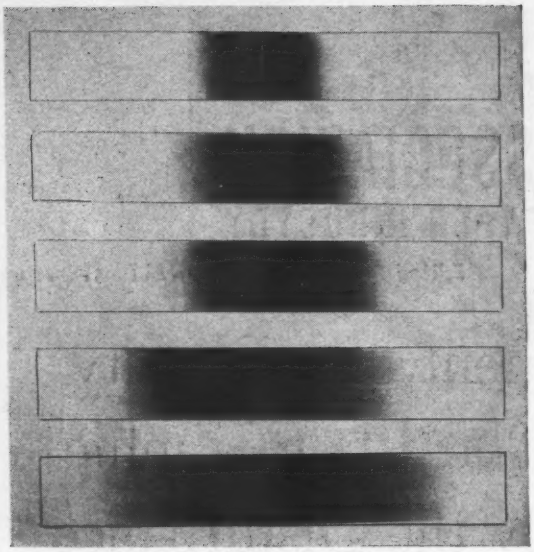

FIG. 1
Photographic Records from a Graded Series of Pulps

noted that the paper at the limit of the pattern had a reflectance of 21.5, which may be taken as absence of darkening. All other values of reflectance may be subtracted from 21.5 to obtain darkening values, as shown in the third column of Table I.

Accordingly, as the pulp, which controlled the behavior of the galvanometer, was uniform or flocculated, the galvanometer swung little or much and the density distribution was narrow or broad. Therefore, it seemed that the statistical measure needed was some measure of that breadth. The data of Table I have essentially the character of a frequency distribution and may be so represented, as is done in Fig. 2. For a frequency distribution, an appropriate measure of spread seems the usual statistical measure—i.e., the standard deviation,

$$\sigma = \sqrt{(\Sigma f \ \Sigma f x^2 - (\Sigma f x)^2) / (\Sigma f)^2},$$

where x is the distance along the base of Fig. 2 (obtained as the distance in millimeters from some arbitrary point on the strip of photographic paper) and f is the vertical distance in the figure and is the intensity of darkening as previously discussed. The detailed calculation of σ for the data of Table I is shown in Table II; such complete tabulation would, of course, be unnecessary in practice. The standard deviation (σ) is a measure of the extent to which a distribution, such as that of Fig. 1, spreads away from its average. For Fig. 2 the average is 21.45 mm. and the standard deviation (σ) is 8.56 mm.; the limits ($\pm\sigma$) of the mean (12.89 and 30.01) have been included in Fig. 2. These limits contain 60.3% of the area as cross hatched in Fig. 2. In a general way, if darkening is conceived as a quantity distributed with some frequency along a strip of paper, then within the limits ($\pm\sigma$) of the mean, a fraction somewhat less than ⅔ of the darkening will be embraced. In so far as all distributions are of the same form, the fraction will be a constant characteristic of that form. In so far as the form differs, the fraction may change a little. It should be noted that, when complicated changes in form are involved, it is improbable that any single number can completely characterize the form. If a series of values is to be developed, the first in importance would be the standard deviation. If the discussion is to be limited to a single numercial value, the standard deviation is probably the best.

The purpose of the present account—i.e., to recommend the use of the present measure of spread—may be furthered by showing some of the experimental material, although the treatments involved are not indicated. First, the values of darkening in Table I for one trial of a given lot of a given pulp are reported in Table III, together with those for a second trial of the same lot of the same pulp and then the resulting pair is matched with a pair of trials on another lot of the same pulp. Some idea is provided of the manner in which the numerical results behave on repetition. At the foot of Table III, the calculations necessary for the determination of the standard

TABLE III.—SEVERAL DISTRIBUTIONS OF DARKENING

	Lot 1		Lot 2	
	Trial 1	Trial 2	Trial 1	Trial 2
x	f	f	f	f
2	0.5	0.0	...	...
4	3.5	1.5	0.0	0.0
6	4.0	7.5	8.0	5.0
8	10.0	10.5	10.0	10.0
10	14.5	12.5	13.0	13.0
12	15.5	15.0	14.0	14.0
14	16.5	15.5	15.0	15.0
16	16.5	16.5	15.0	16.0
18	17.0	16.5	15.0	15.0
20	17.5	16.5	15.0	16.5
22	17.5	17.5	15.5	17.0
24	17.5	17.5	15.5	16.5
26	17.5	17.5	15.5	16.0
28	16.5	17.5	15.5	16.0
30	15.5	17.5	14.0	14.0
32	15.0	16.5	14.0	13.5
34	13.5	15.5	11.0	13.0
36	12.0	15.5	9.0	10.5
38	0.0	6.5	8.0	9.0
40	0.0	0.0	0.0	0.5
Σf	240.5	253.5	223.0	230.5
Σfx	5159	5683	4866	5142
Σfx^2	128,274	147,722	123,812	132,580
σ	8.56	8.95	8.89	8.81

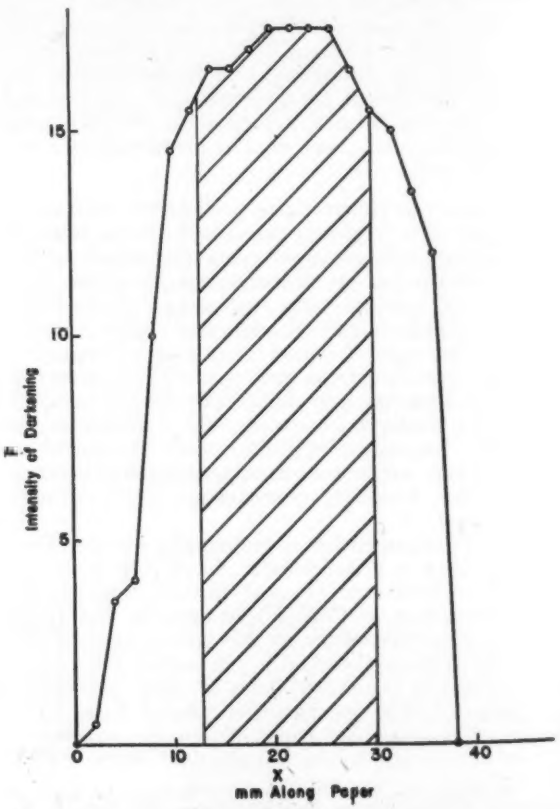

FIG. 2
Darkening as a Frequency Distribution

TABLE IV.—SPREAD σ OF DARKENING FOR A NUMBER OF LOTS OF MATERIAL

Pulp	Lot 1		Lot 2	
	Trial 1	Trial 2	Trial 1	Trial 2
1	8.56	8.95	8.89	8.81
2	8.86	8.91	8.14	8.49
3	8.78	8.34	7.59	6.67
4	7.85	8.11	9.11	9.03
5	8.19	7.70	8.54	8.28
6	7.59	7.04	7.96	7.47
7	6.59	6.27	6.35	6.81
8	5.43	5.08	6.98	6.40
9	5.35	5.54	4.41	4.46

deviation or spread are shown. Finally, the standard deviations are presented. In Table IV, these standard deviations are repeated and followed by two pairs of trials on each of eight other pulps. It will be seen that some variability between lots of a given pulp becomes apparent, as does the variability among pulps.

In a study such as the present, material like that of Table IV may be regarded as primary data; such values may be subjected to analysis. Thus, it may be seen whether the values differ significantly, whether they show some trends or, perhaps, whether some antecedent treatment of the pulp has an appreciable influence on them. Conceivably, it might be required to make an analysis of the variance of such values as those in Table IV. It is unusual to treat values calculated as σ in such a way. Accordingly, it seems best to refer to such values as those in Table IV by some term such as values of spread or of scatter rather than as values of σ.

In many problems there arises a question as to the physical uniformity of material—flocculation of pulp is but one example of a lack of uniformity. For such problems, it would probably be profitable to employ some technique such as the present—i.e., of reducing the observations to the form of a frequency distribution and then of measuring the spread of the distribution by means of a standard deviation.

For advice on the preparation of the present account, the writer is indebted to Dr. J. A. Van den Akker; to Dr. B. W. Rowland he owes the suggestion of the work, illustrative material, and advice.

Literature Cited

1. Wollwage, J. C., *Paper Trade J.* 108, No. 12: 41-48; No. 13: 25-34 (March 23, 30, 1939); *Tech. Assoc. Papers* 22: 578-594 (1939).

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

E. Clinton Ash, Jr., Tester, Crown Zellerbach Corp., Port Townsend, Washington, a 1942 graduate of the University of Alabama.

Robert J. Askin, Manager of Mills, Abitibi Power & Paper Co. Ltd., Toronto, Ont., Canada, a 1923 graduate of Queen's University.

Ralph J. Benes, Jr., Steam Engineer, International Paper Co., North Tonawanda, New York, a 1944 graduate of Pratt Institute.

Sandro Cirla, Direttore, S. p. A. Cartiere Ambrogio Binda, Milano, Italy, a 1928 graduate of Ragioneria College.

Grant F. Davis, Intermediate Chemist, Hollingsworth & Whitney Paper Co., Waterville, Maine, a 1943 graduate of the University of Maine.

Ray Harlan, Development Engineer, Miami Valley Coated Paper Co., Franklin, Ohio, a 1936 graduate of the University of Michigan.

Albert M. Harper, Research Chemist, Fraser Companies Ltd., Edmundston, N. B., Canada, a 1940 graduate of Mount Allison University.

F. Lier Harstad, Superintendent, Berger Langmoen Wallboard Plant, Brumunddal, Norway, a 1929 graduate of Norges Tekniske Hogskole.

Walter A. Johnson, Manager of Manufacturing, Paper Division, Brown Company, Berlin, New Hampshire.

George G. Maltenfort, Research Work, Container Corp. of America, Chicago, Illinois, a 1934 graduate of the University of Illinois.

Edward W. Murphy, Superintendent, H. D. Catty Corp., Norwalk, Connecticut. Attended Pratt Institute.

William D. Rice, Chemical Engineer, P. H. Gladfelter Co., Spring Grove, Pensylvania, a 1943 graduate of Drexel Institute of Technology.

Wylmer L. Scott, Research Chemist, Armstrong Cork Co., Lancaster, Pennsylvania, a 1922 graduate of the University of Cincinnati.

Sailes C. Sengupta, Chief Chemist, Bengal Paper Mills Co. Ltd., Raniganj, Burdwan, India, a 1927 graduate of Calcutta University.

William D. Thompson, Group Leader, Papermakers Chemical Group, Hercules Experiment Station, Wilmington, Delaware, a 1936 graduate of Harvard University.

John K. Russell, Chief Research Chemist, Northeastern Paper Products Ltd., Quebec, P. Q., Canada, a 1934 graduate of McGill University.

Charles G. Simmons, Mechanical Engineer, Jackson and Moreland, Consulting Engineers, Boston, Massachusetts, a 1924 graduate of Pratt Institute, and an Ed. M. degree from Harvard University in 1940.

Harold R. Titus, Research Chemist, Brown Company, Berlin, New Hampshire, a 1921 graduate of the Carnegie Institute of Technology.

Charles H. Waldhauer, Vice-President, U. S. Playing Card Co., Cincinnati, Ohio.

Norman S. Lea, Chemist, Soundview Pulp Co., Everett, Washington, a 1938 graduate of the University of British Columbia.

James W. McIntyre, Technical Director, Munising, Michigan, a 1934 graduate of the Institute of Paper Chemistry.

Himmatsinha Navlakha, Manager, M/S Rohtas Industries Ltd., Dalmianagar, Biher, India, a 1940 graduate of Agra College, Agra, India.

Philip E. Nethercut, Graduate Student, The Institute of Paper Chemistry, Appleton, Wisconsin, a 1942 graduate of Beloit University.

Thomas E. Palmer, Technical Adviser on Paper, Reynolds Metals Co., Richmond, Virginia.

Anthony W. Rizzo, Assistant Chief Engineer, Container Corp. of America, Chicago, Illinois, a 1936 graduate of the University of Cincinnati.

John G. Shotwell, Consulting Chemist and Engineer, Centro Research Laboratory, Briarcliff Manor, New York, a 1933 graduate of Columbia University.

William A. Wrase, Engineer, Central Paper Co., Inc., Muskegon, Michigan, a 1943 graduate of Northwestern Technical Institute.

Glens Falls TAPPI Meeting

The Hudson Valley Group of the TAPPI Empire State Section will meet at the Queensbury Hotel, Glens Falls, N. Y., on Friday, May 16th, at 6:30 p.m. Nelson Allen of E. I. du Pont de Nemours, Inc. will present a paper on "Cellophane."

Jordan Refining of Southern Sulphate Pulp*

By W. F. Gillespie[1] and J. J. Goss[2]

Abstract

An experimental installation is described for conducting experiments on jordan refining.

The variables, consistency, applied power, throughput, addition of alum, and tackle, are discussed and experimental data are given to show the effect of these variables on power consumed, capacity, and stock quality.

A comparison between Miami No. 2 and Miami No. 5 jordans is made.

The literature dealing with refining of pulp is not extensive. This is particularly true in the case of jordan refining to which this discussion will be limited. The reasons for this condition are many. (1). Jordans are largely developed by machine builders who have inadequate facilities for testing jordans on pulp. (2). Cooperative studies between machine builders and paper producers rarely cover a sufficient range of experimental data to go the whole way in making recommendations. (3). To obtain sufficient data within a mill frequently interferes with production to a great extent. (4). The variables affecting refining are many. To make a reasonably complete study of these variables involves a larger program than most mills care to undertake. Certainly many mills have made experiments but much of their work has not been reported.

The work reported herein was completed in the Spring of 1941 and had extended over about a year. Some 220 experiments were run—of about 5 hours duration each. Many were checked and rechecked. From this group a number of experiments have been selected, and reported in the following paragraphs, the purpose being to show the effect of certain variables on power consumption, capacity, and stock quality.

Experimental Layout

The extent of the investigations planned required a separate setup that would not interfere with production. The experimental arrangement is shown in Fig. 1.

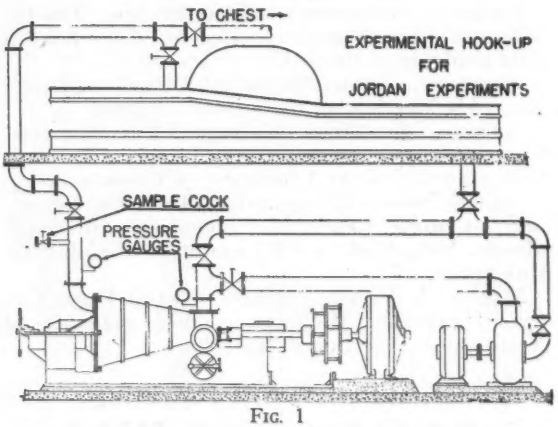

FIG. 1

It consisted of a refiner placed on a basement floor receiving its stock from a calibrated beater, located on a floor above, and discharging, through the jordan, to the same beater. The roll was raised and the beater acted only as a circulating chest. A number of experiments were run showing negligible refining action by the beater as used. A pump was placed in the setup which could be used as desired. Instruments recorded power. Pressure gages and sample cocks were placed as required.

Such an assembly lends itself to good control before an experiment is run but it does have at least one obvious objection. This is a batch process involving recycling of stock, whereas refiners generally are operated on a continuous basis. In spite of this objection, the data presented show reliable trends in the variables discussed. Subsequent commercial application of some of the principles developed justified the conclusions drawn.

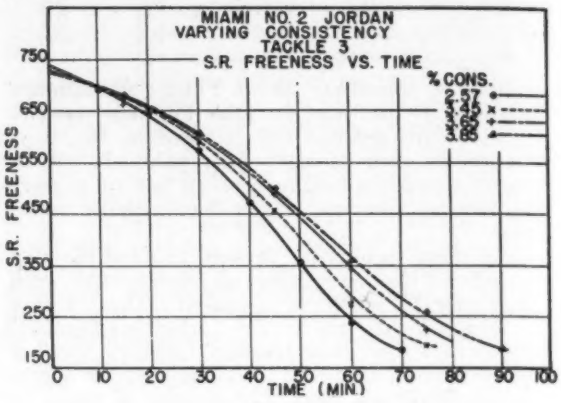

FIG. 2

Time-Freeness Curves

Because of the setup, the data had to be developed from time-freeness curves. Not all investigators are in complete agreement on the reliability of freeness measurements in evaluating stock; however, some believe that a freeness measurement is of value in comparing stock that will be used for the same grades on a given machine. As a control method on refining, the authors believe that it has some merit.

Time-freeness relations were of importance in the studies and since power and capacity figures were calculated from time-freeness curves. Fig. 2 is shown as a typical curve. In this particular case, consistency was the independent variable and from the curves any freeness value may be selected and comparisons made at that freeness.

Power is calculated from the formula—

$$\text{Kw. hr./ton} = \frac{\text{Applied hp.} \times 0.746 \times \text{time (hr.)}}{\text{Tons of moisture-free stock in the beater}}$$

$$\text{and Capacity (tons/24 hr.)} = \frac{\text{Tons moisture-free stock in beater}}{\text{Time to freeness (days)}}$$

* Presented at the meeting of the Technical Association of the Pulp and Paper Industry held at the Hotel Roosevelt, New Orleans, La., Oct. 14-16, 1946.

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Because of the location of the sampling point, the sample is not representative of the whole beater of stock. The sample taken represents the most highly refined stock at any given time, and therefore in arriving at a correct power or capacity figure, there will be a time correction factor to be applied for any given freeness value. Its use will not change the study of the principles involved but will change the magnitude of the final capacity-power figures.

The freeness value used differs from recognized standards and so that there may be a basis of comparison on this scale—

750 is raw screened stock
600-650 is free liner stock
375-425 is about a medium weight bag stock
275-325 is rather slow stock for asphalting grades

The discussion which follows is based on 375 freeness values. The object was to investigate certain principles and the trends are not altered by the freeness chosen. The *magnitude* of variations that are discussed will be affected by the freeness value chosen.

Variables Discussed

The first series of data are on a Miami No. 2 jordan and the discussion is confined to the following variables: (1) Consistency of the stock, (2) applied power, (3) throughput in gallons per minute, (4) the addition of size and alum, and (5) changes in tackle.

Unless otherwise stated, all experiments were run on washed screened sulphate stock at about a pH 9.

Effect of Change in Consistency

In the discussions to follow, capacity is defined as moisture-free tons of stock refined in 24 hours to a given freeness and by throughput, the gallons per minute of stock delivered to the refiner.

From a time-freeness curve, Table I is calculated to show the variation in capacity and power consumption at freeness 375 ml. with 200 hp. applied.

TABLE I.—TACKLE NO. 1
Applied Power 200 h.p.—Throughput 480 g.p.m.

Consistency	Kw. hr./Ton	Capacity, tons/24 hr.	Bursting Strength	Tear
2.94	295	12.13	114	211
3.34	281	12.76	102	209
3.50	268	13.37	107	210
3.80	267.5	13.39	112	230

It is evident that at the low consistency, the kw. hr./ton figure is noticeably higher. At the same time the capacity is lowest and, as the consistency is increased, the power drops and the capacity rises. At a consistency of 3.5%, the values seem to have reached a reasonably constant value.

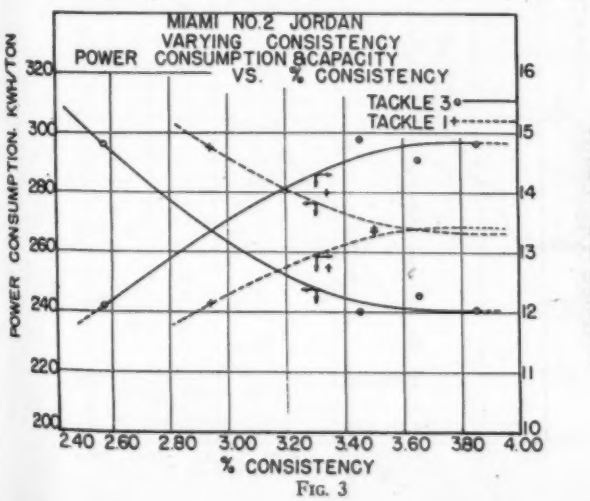

Fig. 3

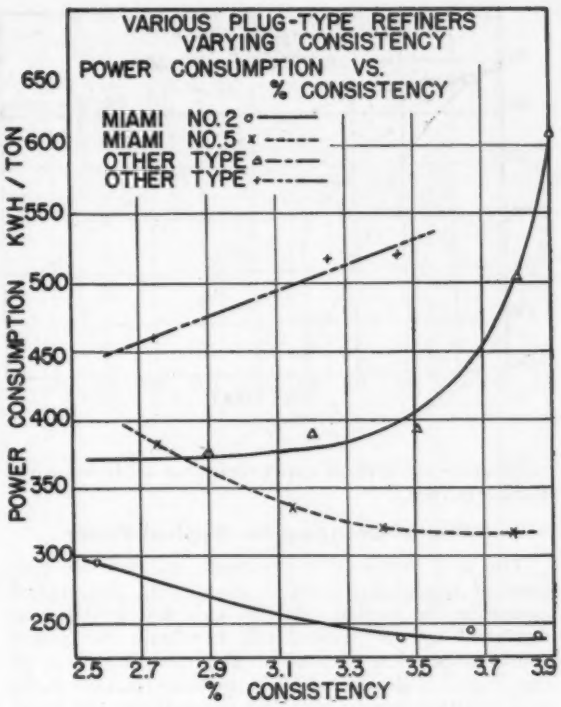

Fig. 4

Table II (calculated from the time-freeness curve Fig. 2) shows data accumulated under the same applied power and throughput conditions, the difference being in the tackle that was used in this series. The same tendency is evidenced. The power consumption is greatest at low consistency, the capacity is least, and again somewhere close to 3.5% consistency is the optimum.

The difference in refined pulp quality does not show a definite enough trend in these series to draw conclusions. Bursting strength and tear are shown as per cent values.

These same data are shown in Fig. 3. The obvious differences in tackle will be discussed later.

The consistency variable is of considerable importance in the selection of a refiner. Referring to Fig. 4, it is seen that one plug refiner operates with lowest power consumption at low consistency, another has a rather flat curve up to about 3.25% consistency at which point the power consumption rises rapidly up to about 3.9%. In the case of the jordan, there is a wider range of efficient operating consistencies. Ranges beyond 3.9% have not been fully explored, but it is believed it will become less efficient at some high consistency.

This figure does not show the optimum conditions of operation of the refiners. It is intended to show that all plug-type refiners do not react the same to consistency changes.

As a result of these initial studies, a consistency of approximately 3.5% was selected to carry out a

TABLE II.—TACKLE NO. 3
Applied Power—200 hp.—Throughput 480 g.p.m.

2.57	296	12.10	110.0	208
3.45	240	14.90	109.5	210
3.65	246	14.55	108.5	194
3.85	241	14.83	108.5	214

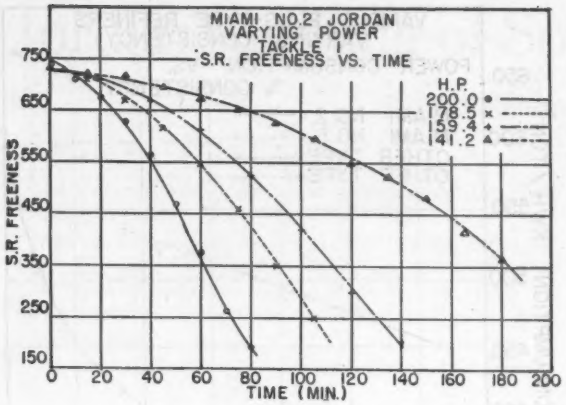

FIG. 5

number of subsequent experiments on a Miami No. 2 jordan refiner.

Effect of Changing the Applied Power

The next series of experiments was for the purpose of studying the effect of varying the applied power to the jordan. In this case the jordan was tightened up, or slacked off, to obtain the power consumption desired and to illustrate the effect of this, Fig. 5 is shown, which is the time-freeness curve at a constant consistency and throughput, but varying the power between 141 hp. and 200 hp.

Another group of experiments was run using a different tackle and varying the applied power between 159.4 and 252 hp.

The values obtained from these two series were calculated to terms of capacity and power consumption with the stock refined again to a constant freeness value (375 ml.). The results are shown in Tables III and IV.

TABLE III.—TACKLE NO. 1
Approx. Consistency 3.5%—Throughput 480 g.p.m.

Applied Power	Kw. hr./Ton	Capacity, tons/24 hr.	Bursting Strength	Tear
200	261	13.71	110	231
178.5	352	9.06	119	212
159.4	405	7.05	118	222
141.2	589	4.30	124	239

The effects of applying as much power as possible are seen from these data—low applied power means greater power consumption per ton of refined stock with a very great reduction in capacity. This indicates that jordans should be operated at full power load when possible. It is not always practical to take a jordan off the line—sometimes it is necessary to back off on jordans but when this is done power consumption goes up per ton of stock refined.

Figure 6 is a graphical presentation of the data in Tables III and IV. The differences in tackle are again rather striking.

The manner in which power is consumed by a jordan is of interest. Excluding the power used by the motor itself, the jordan consumes power by: (1) Overcoming mechanical friction—bearings, etc.; (2) churning the water or stock; (3) pumping against any differential head; and (4) bar contacts.

A few years ago the authors made a rather complete study of a small Miami No. 4 jordan on the distribution of the power among the above factors. A micrometer adjusting mechanism was installed to determine the plug and shell clearance. With the bars just cleared, the power consumed in merely churning the water was between 36% at low speeds and 60% of the total at higher speeds.

TABLE IV.—TACKLE NO. 3
Approx. Consistency 3.5%—Throughput 480 g.p.m.

252	236	19.1	125	189
200	240	14.9	108	202
178.5	244	13.1	109	202
159.4	252	11.31	115	210

This distribution was not determined in the present series of experiments, but the results of the previous studies indicate it is a reliable conclusion that the mere churning of the stock requires a very considerable amount of power. Therefore, in motor sizes, it is important to select a motor of sufficient size so that after supplying the power required for pumping and churning, there is ample for refining. For refining, a large part of the increment of power left, after friction, churning, and pumping power has been subtracted, is used. The larger the motor, the larger this increment may be.

As far as quality of stock is concerned, there seems to be a tendency for both higher bursting-strength and tear as the applied power is decreased (Tables III and IV). It is quite probable that the more moderate refining rate could lead to higher quality.

Effect of Changing the Throughput

In operating a paper machine, it is necessary to vary the throughput quite frequently. The next group of experiments was planned to determine what happens when the jordan is operated under such conditions. By means of a pump, it was possible to change the throughput over a considerable range and maintaining a constant consistency and power load a series of experiments was run, the details of which are shown in Tables V and VI. These were calculated from a typical time-freeness curve.

These data are shown in Fig. 7. There are two very wild points, but excluding these it is evident that an attempt to force too much stock through a

TABLE V.—TACKLE NO. 1
Applied Power 200 h.p.—Freeness 375 ml.

Consistency, %	Throughput, g.p.m.	Kw. hr./Ton	Tons/Day	Bursting Strength	Tear
3.50	480	265	13.47	107	232
3.69	585	240	14.95	121	250
3.51	1170	296	12.08	126	250
3.65	1580	395	9.07	128	268

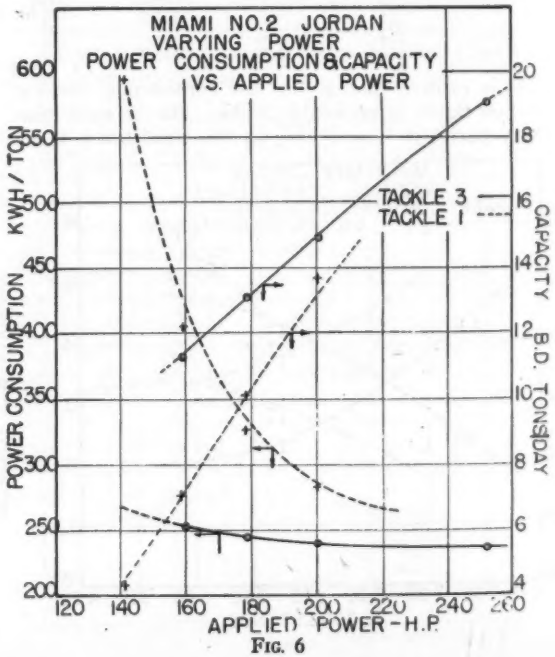

FIG. 6

jordan by a pump results in reducing its refining capacity and increasing the power consumption per ton of stock refined.

Referring again to Tables V and VI, there seems to be a tendency to improve the character of the stock, both in bursting-strength and tear, as the throughput is increased. It is obvious that the treatment has been more gentle even though more power per ton stock has been expended.

The question of "what price can be paid for quality" will always have to be a matter of policy.

Effect of Size and Alum

It is a generally accepted fact that when alum and size are added to the stock before refining, that the power consumption is very greatly increased and it has become standard practice in Southern mills to add the larger part of the alum after the jordans.

An examination of the curves shown in Fig. 8 shows the tremendous increase in power required to refine stock containing alum. The additional alum required to precipitate the size probably accounts for the increase in power when size and alum are both used. In any case, the addition of size is not a big factor in increasing the power consumed. It is the quantity of alum rather than the pH that accounts for the increased power consumption.

Summary

In summarizing thus far the effect of consistency, applied power, throughput, and alum addition on refining, the conclusions drawn from the data presented are:

A. For high efficiency in power consumption:

1. Consistency should be reasonably high. This data would indicate that about 3.5% is not far from an optimum value.

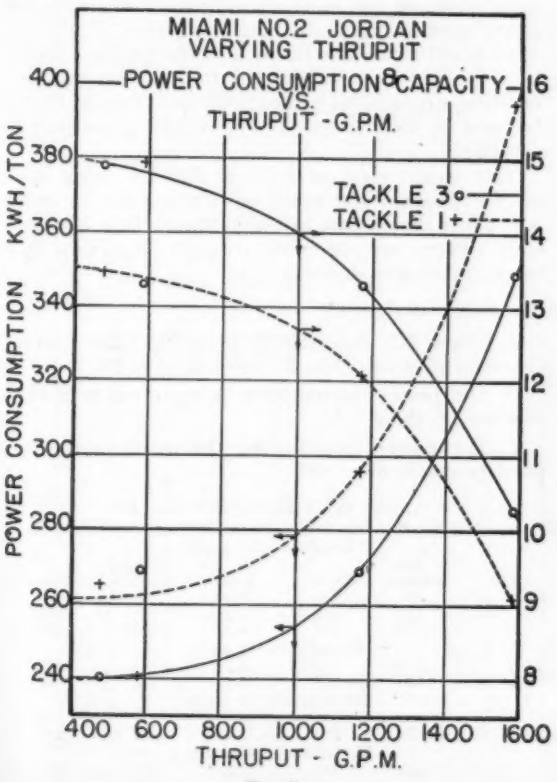

Fig. 7

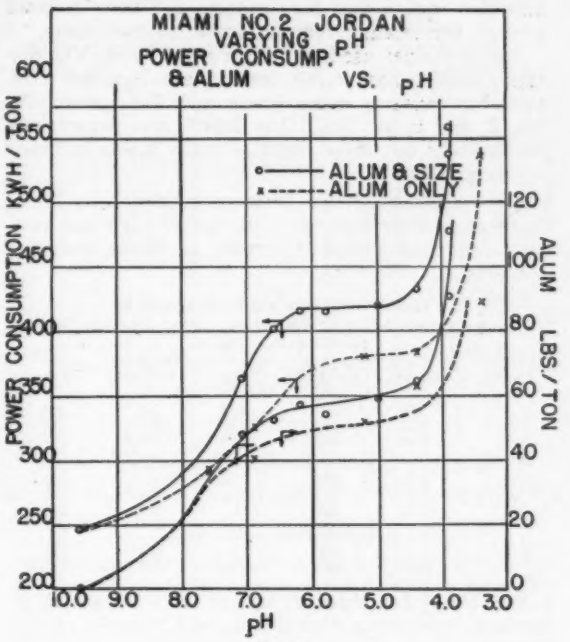

Fig. 8

TABLE VI.—TACKLE NO. 3
Applied Power 200 h.p.—Freeness 375 ml.

3.45	480	240	14.9	108	202
3.51	585	269	13.3	112	188
3.31	1170	269	13.3	116	204
3.50	1580	349	10.3	122	202

2. The applied power should be as great as practical.

3. The throughput at 3.5% should not exceed about 750 gallons per minute.

4. The quantity of alum added before refining should be held to a practical minimum.

B. Capacity will be increased:

1. By increasing consistency up to 3.5% or somewhat higher.

2. By increasing the applied power.

3. By holding the throughput at a practical minimum (750 gallons per minute or lower).

4. By using as little alum as possible before refining.

Tackle

Whether discussions on tackle are on a practical or theoretical basis, wide differences of opinion on the results of tackle changes usually occur. The experiments on tackle presented in the following paragraphs are by no means complete but certain tendencies are shown.

The data on the tackles discussed are given in Table VII.

There have been papers presented *(1, 2)* discussing relationships between linear inch bar contacts

TABLE VII

	Tackle I	Tackle II	Tackle III
Plug	3/8 in. duplex	7/8 in. single	7/8 in. single
Shell	3/8 in. single duplex triplex	3/4 in. single duplex triplex	1/2 in. single

Tackle No.	Area of Openings, sq. in. Small End	Area of Openings, sq. in. Large End	Mean Fiber Velocity, ft./sec. throughput plug and shell	Sq. In. Bar Contacts per min.	Linear Inch Bar Contacts per min.
1	15.95	41.24	6.98	11,482,000	82,140,000
2	15.95	41.24	6.98	13,522,000	41,070,000
3	16.380	43.40	6.75	11,887,000	27,210,000

and also square inch bar contacts and there is some ground for relating refining action to such units.

In the tackles used, it is seen from Table VII that tackle No. 1 has 16.7% less square inch bar contacts but twice as many linear inch bar contacts as No. 2, and tackle No. 1 has 2.64% less square inch bar contacts but three times as many linear inch bar contacts as No. 3.

It is emphasized that between tackles Nos. 1 and 3, there is little difference in square inch bar contacts but considerable difference in linear inch bar contacts.

TABLE VIII.—CHANGE IN TACKLE

Consistency about 3.5%; Throughput 480 g.p.m.; Freeness 375 ml.

Tackle No.	Consistency, %	Kw. hr./ Ton	Tons/ 24 hr.	Bursting Strength, %	Tear %
		Applied Power—200 hp.			
1	3.50	268	13.36	105	228
2	3.51	258	13.87	119	203
3	3.45	240	14.93	109.5	207
		Applied Power—178.5 hp.			
1	3.51	352	9.06	119	212
2	3.45	292	10.96	123	222
3	3.40	244	13.1	109	202
		Applied Power—159.4 hp.			
1	3.38	405	7.05	118	222
3	3.44	252	11.31	115	210

In Table VIII, three groups of tests are shown at constant consistency, throughput, and freeness values, the variable in this case being applied power.

For the same applied power, the No. 1 tackle shows (1) a greater power consumption per ton and (2) less capacity.

In the case of the No. 1 tackle, i.e., with linear inch bar contacts high, the effect of applied power is great. When the linear inch bar contacts are low, then applied power is not nearly as important a factor. Actually, if applied power is kept high, then the power consumption and capacity will not vary a great deal in the extremes of tackle which have been represented here. This is shown in Fig. 9.

A further comparison of tackles can be made by a study of the data given in Table IX.

In this case the tackles are compared with constant applied power, consistency and stock freeness, and again it is shown that as the throughput is increased the power consumption increases and capacity falls off, but as far as tackle is concerned that in every case the No. 1 tackle consumes more power per ton of stock refined and the capacity is reduced.

The effect on quality is clear, perhaps even surprising. Under all conditions of applied power and throughput variation, (Table VIII and IX), the tear of the stock produced with high linear inch bar contacts is greater in every case except one. The data on tear and burst in all experiments on other variables have not led to really definite conclusions, but in the case of tackle the data show that, if it is desired to cut stock, low linear inch bar contacts should be used and if it is desired to increase tear and bursting strength, high linear inch bar contacts should be used at an increase in power and a sacrifice in capacity.

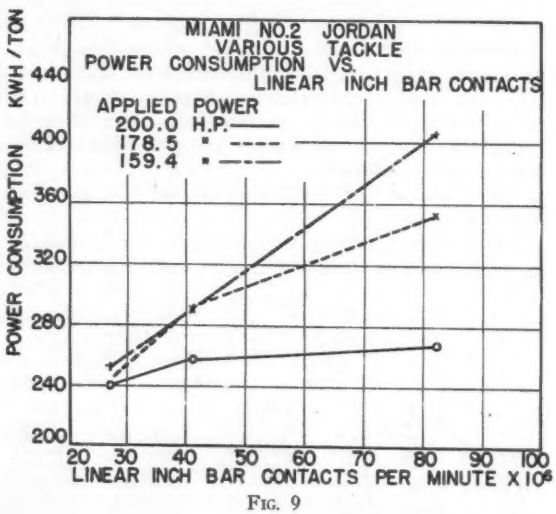

FIG. 9

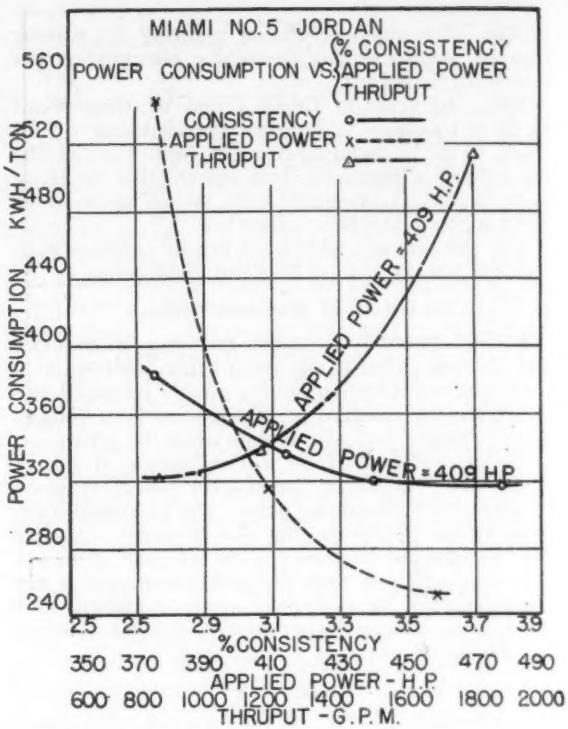

FIG. 10

No. 5 MIAMI JORDAN

A Miami No. 5 jordan exhibits the same general characteristics as a No. 2 (refer to Fig. 10).

1. The power consumption is optimum at a consistency of about 3.5%.

2. The power consumption decreases as the applied power is increased.

TABLE IX.—CHANGE IN TACKLE

Consistency about 3.5%; Applied Power 200 hp.; Freeness 375 ml.

Tackle No.	Consistency, %	Kw. hr./ Ton	Tons/ 24 hr.	Bursting Strength, %	Tear %
		Throughput—480 g.p.m.			
1	3.80	268	13.39	112	230
3	3.85	241	14.83	108.5	214
		Throughput—585 g.p.m.			
1	3.45	272	13.17	132	234
3	3.51	258	13.85	112	188
		Throughput—1170 g.p.m.			
1	3.54	296	12.08	126	250
3	3.31	269	13.30	116	204
		Throughput—1580 g.p.m.			
1	3.65	395	9.07	128	268
3	3.50	349	10.30	122	202

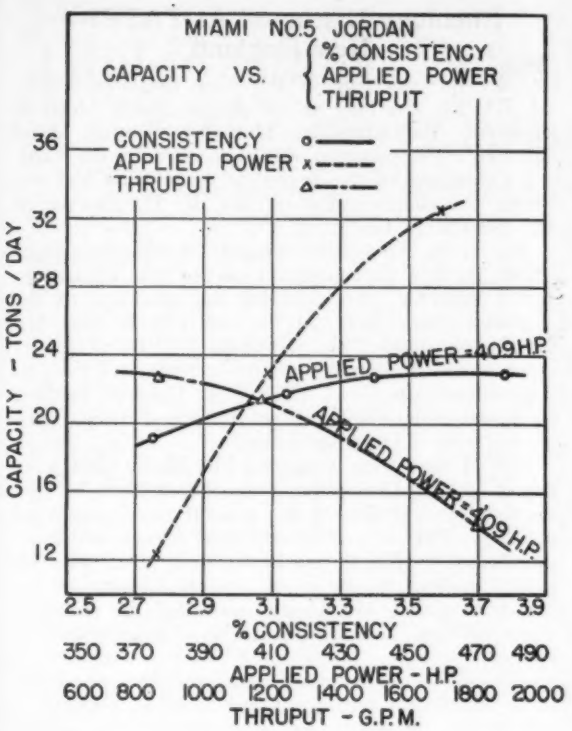

Fig. 11

3. The power consumption is increased as the throughput is increased.

On this curve it is necessary to point out that the throughput and consistency curves were developed at an applied power of 409 hp. If this study had been made with 459 hp. applied, then the throughput and consistency curves would have been lowered considerably but the general nature of the curve remains about the same.

Similarly, from the curves in Fig. 11, the capacity increases with (1) increased applied power and (2) increased consistency, and decreases with (3) increased throughput.

Comparison of a Miami No. 5 and Miami No. 2 Jordan

In this comparison, the No. 5 was operated at a speed of 396 r.p.m., and the No. 2 at a speed of 433 r.p.m.

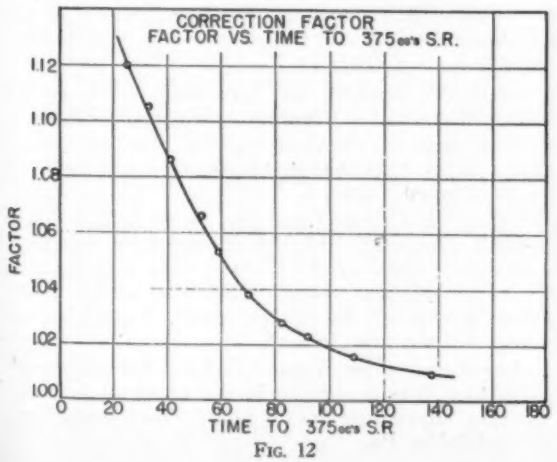

Fig. 12

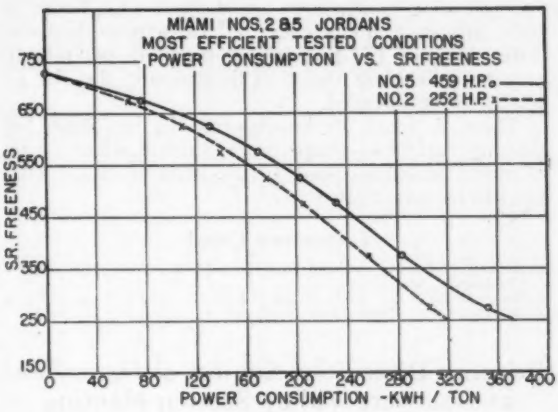
MIAMI NOS. 2 & 5 JORDANS
MOST EFFICIENT TESTED CONDITIONS
POWER CONSUMPTION VS. S.R. FREENESS
NO.5 459 H.P.
NO.2 252 H.P.
SR. FREENESS
POWER CONSUMPTION - KWH / TON

Fig. 13

At the beginning of this report, the necessity of a correction factor in the time-freeness curves was mentioned.

This correction curve is shown in Fig. 12. In determining this correction curve, a sample was taken from the jordan discharge and the beater at the same time. The difference in freeness was measured and from the characteristic time-freeness curve, the time required to bring all the stock to the freeness of the jordan discharge was determined. This factor is applied to the data given in the following comparison between a No. 5 and a No. 2 Miami jordan.

Power Consumption

Under the most efficient conditions tested, the Miami No. 2 jordan shows slightly less power consumption per ton of stock refined. This is shown in Fig. 13.

It is necessary to point out, however, that in the comparison in Fig. 13, the No. 2 jordan was operated with the low linear inch bar contact filling. If the curve for a higher linear inch bar contact filling for the No. 2 jordan had been plotted, it would almost coincide with No. 5 jordan curve. Or, conversely, if the filling in the No. 5 jordan was changed, its power efficiency could be increased.

Comparative capacity figures are shown in Fig. 14.

The important point to observe on this curve is the great increase in capacity obtained from a No. 5 Miami over a No. 2 when running free stocks, such as may be suitable for fourdrinier liner.

In deciding between Nos. 5 and 2 Miami jordans,

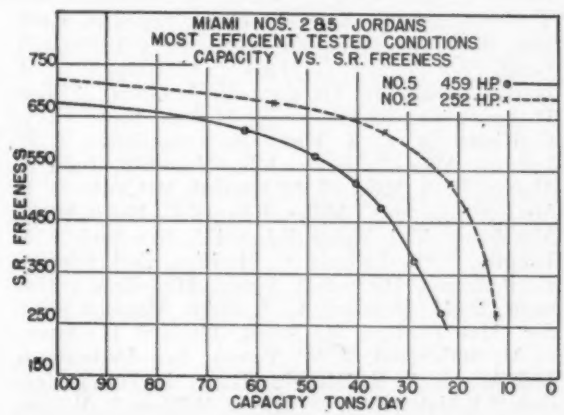

Fig. 14

the following conclusions are drawn: (1) There is little difference in efficiency, (2) capacity is the main difference, and (3) throughput in gallons per minute may be a deciding factor in determining the size of jordan to be installed.

There is much to be reported in the study of refining variables—temperature, stock hardness, type of stock, pressure, speed, further data on tackle, etc., need to be investigated *(3)*.

Literature Cited

1. Bidwell, G. Lamont, Jr., and Sutherland, D. M., *Tech. Assoc. Papers* 19: 162-63 (June, 1936).
2. Dietz, Franklin M., *Tech. Assoc. Papers* 20: 225-27 (June, 1937).
3. Brazeau, G. S., *Paper Trade J.* 87, No. 4: 53-54 (July 26, 1928).

Printing Difficulties Subject of Discussion at Delaware Valley Section Meeting

Theodore Makarius, Eastern District Manager for Fuchs & Lang, Inc. was the speaker at the May 2nd meeting of the TAPPI Delaware Valley Section which was held at the Engineers Club in Philadelphia. Mr. Makarius was introduced by Robert H. Simmons, Chairman of the TAPPI Graphic Arts Committee.

After indicating some of the difficulties encountered during the printing operation, the speaker suggested that much could be gained if the paper industry would promote greater knowledge concerning the properties and characteristics of the various grades of paper and paperboard. Such information would be invaluable to the many small print shops who do not have technical departments and so must rely on the experience of their pressmen. The fact that with the increase in the use of the offset process for all types of printing work, there are relatively few experienced offset pressmen and most of these located in the larger shops increases the problem of the small operator. A better understanding of what can and what cannot be done with the various papers distributed to the trade would promote better printing as well as a better customer-producer relationship.

The following were present and took part in the discussion period:

Edward J. Albert, A. I. Andrews, Nelson P. Anigo, E. R. Baukitz, Russell H. Bentz, John E. Biegner, R. T. Bingham, Alan R. Boyd, Don Bradner, H. C. Brill, S. G. Briscoe, K. W. Britt, Philip G. Bruno, John Carson, Irwin C. Clare, J. W. Clark, J. D. Davis, George H. Detwiler, August S. Erspaner, P. C. Evan, James S. Evans, John Fachet, J. M. Farnum, Edward R. Feicht, Jeanne H. Fisher, Hobart L. Geer, Carl C. Gehring, J. D. Gercke, Otto T. Goeepinger, Frederick W. Goetz, James W. Goldring, A. J. Gougeon, John M. Graham, William B. Groff, Sam Hagner, L. Hans, J. C. Harper, A. M. Hartley, Philip H. Hershey, V. Jacobsen, William D. James, Bayard S. Johnson, Howard Kaye, Harry C. Kinne, Jr., L. T. Kratz, S. J. Leishman, J. H. Loomis, Allen A. Lowe, John Macadam, John A. Manley, C. S. Maxwell, D. Kenneth McCurdy, R. E. McGrath, Byron C. Miller, Edward C. Molin, W. B. Morehouse, R. J. Myers, Edward A. Newcomb, J. A. Paciello, E. R. Padavic, C. H. Rice, Carl Schmidt, E. Shallcross, Mildred H. Simon, Mrs. Robert Simmons, R. H. Simmons, L. J. Smith, Maxwell Steetner, Mrs Howard H. Street, Howard H. Street, L. M. Sutherland, T. W. Toovey, Roy Underdown, Jack Ward, A. E. Waugh, Harvey L. Webb, Kenneth S Whialer, Tom Wilkinson, William R. Willets, and A. L. M. Zixler.

Rheology Discussed At TAPPI—New England

The April meeting of the New England Section of TAPPI was held at the Roger Smith Hotel in Holyoke, Massachusetts, Thursday evening, April 17, 1947. The program was sponsored by the Coating Committee of the Technical Association and was under the chairmanship of Mr. R. H. Mosher of the Marvellum Company.

Mr. L. B. Tucker introduced Dr. Werner Kaufmann, the new representative of the TAPPI Executive Committee who extended the greetings of the National Association. In his first official visit, Dr. Kaufmann stressed that National TAPPI placed its reliance on the support of the sections and that, as representative to the TAPPI New England Section, he hoped to be able to effect a closer liaison of the section with the national group.

Mr. Mosher then welcomed Mr. Philip Dewey of the R. B. H. Dispersion, Inc., the speaker for the evening, who discussed the general development of rheology. This is a relatively new science and as it is elevated to the theory of flow, is more than of casual interest to the paper coater. Illustrating his talk with slides, Mr. Dewey indicated the different types of flow and explained the characteristics of each.

The problem is complicated by the fact that there is no instrument capable of indicating all phases involved. It is relatively simple to measure Newtonian flow such as that exhibited by oils but plastic flow, the type encountered by the paper coater, requires other types of apparatus. These instruments have their limiting factors considering the problem as a whole, but much valuable information can be obtained by their utilization. It was recommended that each mill consider its specific application and choose an instrument type which will give informative results relating to the particular problems involved. A perfect instrument is to be desired but the fact that one has not yet been developed should not hinder the usage of those that are available.

Over one hundred attended the meeting and participated in the discussion which followed the formal presentation.

TAPPI Notes

C. A. von Ende, formerly of the S. D. Warren Company, is now chemical engineer for the Gilman Paper Company, Gilman, Vt.

George Becker is now managing director of the Cellulose Development Corporation Ltd., Hatch End, Middlesex, England.

Fred W. Sanders has been transferred to the National Adhesives Company, Minneapolis office.

Erik Hansen, chemical engineer for the United Paper Mills, Copenhagen, Denmark, is visiting mills in the United States.

George A. Cramond and Mr. Smail of the Tullis, Russell Company, Ltd., Markinch, Fife, Scotland, are visiting mills in the United States and Canada. Dr. Cramond was recently chairman of the Technical Section of the Papermakers' Association of Great Britain and Ireland.

Lloyd Carpenter, formerly of the Gilman Paper Company, is now chemist in raw material and production supervisor with E. W. Twitchell, Inc., Philadelphia, Pa.

United States Patents on Papermaking

First Quarter, 1947

Compiled by Clarence J. West, Chairman, Committee on Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Because as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; also, it is possible that the list may contain some patents that do not apply specifically to pulp and paper manufacture.

Copies of any of the following patents may be obtained from the United States Patent Office, Washington 25, D. C., by sending twenty-five cents for each patent desired.

January 7, 1947

2,413,686. Infusion package with handle and the method of manufacturing same. Louis Barnett, Brooklyn, N. Y., assignor to Millie Patent Holding Co., Inc. Filed Feb. 26, 1941. 18 claims. (Cl. 99-77.1).

2,413,764. Tracing medium. Walker M. Hinman, assignor to The Frederick Post Company, Chicago, Ill. Filed June 9, 1941. 15 claims. (Cl. 117-65). The transparentizing agent may be a white mineral oil containing high-grade wood resin, abietic acid, hydrogenated rosin, or ester gum.

2,413,923. Powder box. Flora M. Kackley, Faversham, England, and Jane Whitman, Great Neck, N. Y.; said Whitman assignor to said Kackley. Filed Sept. 27, 1945. 6 claims. (Cl. 229-43).

2,413,958. Molded magnesia insulation and method of manufacture. August M. Dinkfeld and Hermann F. Vieweg, assignors to Johns-Manville Corporation, New York, N. Y. Filed Sept. 10, 1945. 12 claims. (Cl. 92-54). A magnesia insulation is molded from a slurry containing magnesium carbonate, asbestos fibers, and water.

2,413,966. Reel. Hyman Greisman, assignor to Monroe Paper Box Co. Inc., New York, N. Y. Filed Nov. 6, 1944. 1 claim. (Cl. 242-119). A "knock-down" type of reel for winding tapes, etc., made wholly of cardboard.

2,413,999. Stripping machine. Lyle E. Shaner, assignor to Box Blank Corporation, New York, N. Y. Filed June 22, 1944. 17 claims. (Cl. 164-87). A machine for removing scraps adhering to blanks precut from cardboard.

2,414,062. Apparatus for heating and controlling the temperature in a continuously operating digester. Johan C. F. C. Richter, assignor to Aktiebolaget Kamyr, Karlstad, Sweden. Filed July 30, 1945. 4 claims. (Cl. 92-7). At least two circulation conduits, outside the digester, as connected with the digester at points intermediate the feeding end and the discharge end.

January 14, 1947

2,414,109. Method of and machine for making blanks. Cutler D. Knowlton and George F. C. Burke, assignors to Hoague-Sprague Corporation, Lynn, Mass. Filed Dec. 4, 1943. 13 claims. (Cl. 93-58.4). In the manufacture of box blanks, four sets of knives are provided for forming the slots and the cutaway portions at the outer edges of the endwings in a single operation.

2,414,203. Hat carton. Everett C. Johnson, assignor to Montgomery Ward & Co., Incorporated, Chicago, Ill. Filed Feb. 12, 1945. 2 claims. (Cl. 206-8).

2,414,251. Method of coating fibrous surfaces. Clarence W. Wilson, assignor to California Fruit Growers Exchange, Los Angeles, Calif. Filed Feb. 17, 1942. 2 claims. (Cl. 117-60). The surface of paper is wetted with water and coated with a continuous film containing a fibrous pectate (not less than 0.5 pound of pectate per thousand square feet of surface).

2,414,313. Process of coating web surfaces. Thomas G. Leek, assignor to Edgar Brothers Company, Metuchen, N. J. Filed Oct. 8, 1945. 11 claims. (Cl. 117-155). Paper is coated with a liquid dispersion of a spray-dried clay-resin composition and starch and calendered.

2,414,320. Dielectric sheet material. Harry F. Miller and Levin W. Foster, assignors to General Electric Company, Schenectady, N. Y. Filed Nov. 13, 1942. 2 claims. (Cl. 117-155). Paper is impregnated with a copolymerized mixture of 95% *N*-vinylcarbazole and 5% diallyl phthalate.

2,414,327. Method of water- and sunproofing paper and textiles and the composition to be used in the method. Alvis R. Patterson, Port Saint Joe, Fla. Filed Sept. 3, 1941. 16 claims. (Cl. 106-287). The treating composition contains 3-10 grams ferrous sulphate, 0.3-3 grams of an acid (phosphoric, tannic, citric, tartaric, formic), and 0.8-5 grams of weak black liquor.

2,414,360. Manufacture of water-resistant laminated articles. John D. Carter, assignor to Philadelphia Quartz Company, Philadelphia, Pa. Filed Aug. 1, 1941. 13 claims. (Cl. 154-40). In a laminated article, the faces of the plies are impregnated with a small amount of aluminum chloride and joined by a silicate adhesive.

January 21, 1947

2,414,474. Resilient abrasive disk. Cecil C. March, assignor to Minnesota Mining & Manufacturing Company, St Paul, Minn. Filed June 3, 1944. 5 claims. (Cl. 51-195). Vulcanized fiber is the basis of a flexible abrasive disk.

2,414,533. Laminated board. George B. Johnston, assignor to The Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed May 5, 1942. 5 claims. (Cl. 154-45.9). Roofing felt is laminated with an adhesive composed of sodium silicate, Portland cement, trisodium phosphate, and sodium fluoride.

2,414,540. Liquid coating compositions and coated fibrous containers. John C. Lum, assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa. Filed Dec. 22, 1943. 5 claims. (Cl. 229-3.1). The coating contains at least 70% ethylcellulose and up to 20% of an alkyl acetamide.

2,414,659. Ventilated wood reinforced fiberboard container. Harry E. Montague, assignor to H. E. Montague & Company, New York, N. Y. Filed April 11, 1944. 1 claim. (Cl. 229-23).

2,414,671. Folding display box. Nathan Rosenthal, assignor to Rosenthal Paper Company, St. Louis, Mo. Filed April 15, 1944. 1 claim. (Cl. 206-44).

2,414,703. Paper box. Harry L. Snyder, West Los Angeles, Calif. Filed Sept. 6, 1943. 3 claims. (Cl. 229-16).

2,414,739. Combination ribbing and slitting machine. Paul R. Heygel, assignor to Ecusta Paper Corporation, Pisgah Forest, N. C. Filed Nov. 11, 1942. 3 claims. (Cl. 92-69). A machine for embossing and slitting cigarette paper.

2,414,763. Folding paperboard box. William G. Palmer, assignor to The Bartgis Brothers Company, Ilchester, Md. Filed May 14, 1943. 1 claim. (Cl. 229-31).

2,414,833. Thermoplastic paper and process of preparing the same. Fay H. Osborne, assignor to C. H. Dexter Sons, Inc., Windsor Locks, Conn. Filed May 9, 1944. 4 claims. (Cl. 92-39). A paper for tea bags is composed of nonhydrated fibers (manila hemp, caroa, jute, or Indian hemp) and 15-25% Vinyon fibers.

2,414,854. Fiberboard folding box construction. Sidney Conescu, Brooklyn, N. Y. Filed Dec. 30, 1944. 6 claims. (Cl. 229-31).

2,414,858. Tanning of proteins. Paul B. Davidson, assignor to Strathmore Paper Company, Springfield, Mass. Filed Dec. 4, 1940. 8 claims. (Cl. 117-154). Glue-sized paper is passed through a solution containing 1% each of formaldehyde and glyoxal; it has high wet tensile and wet run strengths.

2,414,935. Seam for woven wire belts and method of making the same. Donald C. Dilley and Robert R. McGregor, assignors to The Lindsay Wire Weaving Company, Cleveland, Ohio. Filed March 1, 1943. 2 claims. (Cl. 245-10). Method of sewing woven wire fabric plies.

February 4, 1947

2,415,081. Liquidproof paper container. Lewis C. Brooks, Madison, Wis., assignor of one third to Ira M. Jones, Mequon, Wis. Filed Oct. 23, 1942. 7 claims. (Cl. 229-17).

2,415,143. Transportation box for baby chicks. Kinney I. Miller, Lancaster, Mo. Filed Aug. 14, 1944. 4 claims. (Cl. 229-6).

2,415,160. Coating composition. Daniel D. Cameron, assignor to Hercules Powder Company, Wilmington, Del. Filed May 19, 1943. 5 claims. (Cl. 106-230). The composition contains 30-50% of a rosin derivative liquid at room temperature, 45-65% of a metallic rosinate, and 6-15% of a waxy substance.

2,415,204. Match-book making machine. Nelson E. Garrison, assignor to Joseph Shapiro, Baltimore, Md. Filed Jan. 10, 1945. 7 claims. (Cl. 93-2).

2,415,244. Press for the manufacture of fiberboards. Tor O. Hillbom, Karlshall, Lulea, Sweden. Filed July 23, 1943. 2 claims. (Cl. 92-61).

2,415,260. Container. Alfred A. Richards, assignor to Edward Lloyds Limited, London, England. Filed Sept. 30, 1943. 10 claims. (Cl. 229-43).

2,415,323. Method of making containers. Isaac L. Wilcox, assignor to Oswego Falls Corporation, Fulton, N. Y. Filed June 20, 1940. 3 claims. (Cl. 93-39.1). A container suitable for liquids.

2,415,350. Press roll arrangement for papermaking machines. Lloyd Hornbostel and Edward D. Beachler, assignor to Beloit Iron Works, Beloit, Wis. A combination of suction pick-off roll assemblies and press sections.

2,415,351. Papermaking machine. Lloyd Hornbostel and John E. Goodwillie, assignors to Beloit Iron Works, Beloit, Wis. Filed April 1, 1944. 3 claims. (Cl. 92-49). A takeoff or suction transfer roll assembly for a Fourdrinier type machine for the manufacture of tissue paper.

2,415,387. Packaging hygroscopic materials. Winfred H. Graebner and Russell C. Flom, assignors to Marathon Corporation, Rothschild, Wis. Filed Jan. 24, 1944. 12 claims. (Cl. 206-46). The barrier layer consists of 3% aluminum stearate, 5% ester gum, and 92% microcrystalline wax (melting at 145-147° F.).

February 11, 1947

2,415,439. Purification of liquids by lignin. Wyly D. Nelson, Reserve, La. Filed Jan. 19, 1942. 5 claims. (Cl. 210-2). Cane sugar juices are clarified with lignin.

2,415,551. Laminated greaseproof paper. George C. Borden, Jr., and Walter Herrick, assignors to Riegel Paper Corporation, New York, N. Y. Filed May 30, 1944. 4 claims. (Cl. 154-46). A laminating composition consists of hydrogenated soybean oil, rosin ester, and mixed amylnaphthalenes.

2,415,625. Method of making containers. James L. Coker, III, assignor to Sonoco Products Company, Hartsville, S. C. Filed Oct. 15, 1942. 7 claims. (Cl. 93-39.1). A rigid self-supporting paper container.

2,415,631. Photographic paper. Hollis T. Galley, assignor to Eastman Kodak Company, Rochester, N. Y. Filed March 30, 1945. 6 claims. (Cl. 95-8). A photographic paper which has been baryta coated on one side, is waterproofed with cellulose butyrate and a plasticizer.

2,415,644. Method and apparatus for continuously applying a coating to a web and controlling the thickness of the same. Lee W. Leonhard and John Q. Collin, assignors to Eastman Kodak Company, Rochester, N. Y. Filed Nov. 16, 1942. 11 claims. (Cl. 117-102). Method of controlling the thickness of coating solution applied to the surface of a web.

2,415,697. Method of making asphalt coating compositions. Edwin C. Knowles and Frederic C. McCoy, assignors to The Texas Company, New York, N. Y. Filed March 31, 1944. 3 claims. (Cl. 196-74). Asphalt and a residue from the distillation of a furfural extract of a lubricating oil are dissolved in a naphtha solvent.

2,415,721. Paper box construction. Sterling R. Arner, assignor to Old Dominion Box Company, Lynchburg, Va. Filed June 21, 1944. 1 claim. (Cl. 229-5.5).

2,415,777. Production of aliphatic acids from sulphite waste liquor. Charles Weizmann, assignor to Butacet Limited, London, England. Filed March 22, 1943. 13 claims. (Cl. 195-47). The neutralized waste liquor is fermented by cultures prepared from soils in which have been cultivated beets and the like; the acids formed include acetic, propionic, and butyric.

2,415,763. Heat-resisting laminated plastic and production thereof. Patrick P. Ryan, assignor to St. Regis Paper Company, New York, N. Y. Filed Jan. 30, 1946. 8 claims. (Cl. 154-138). Laminates are formed from an absorbent type of kraft paper impregnated with a phenol-aldehyde resin in isopropyl.

2,415,779. Method of increasing retention of fillers in papermaking. Clarence W. Wilson, assignor to California Fruit Growers Exchange, Los Angeles, Calif. Filed Feb. 16, 1942. 2 claims. (Cl. 92-21). Pulp is treated with an aqueous dispersion of water-soluble pectate immediately before it is run onto the screen.

February 18, 1947

R22,842. Method and machine for making composite boards. Irving Hill, assignor to George W. Swift, Jr., Inc., Bordentown, N. J. Original No. 2,384,676, dated Sept. 11, 1945. Application for reissue Aug. 5, 1946. 6 claims. (Cl. 154-31).

2,415,862. Valved bag and method of manufacturing it. Daniel Belcher, assignor to Bemis

Bro. Bag Company, St. Louis, Mo. Filed March 17, 1944. 2 claims. (Cl. 229-62.5).

2,415,869. Carton. Charles J. Coleman, assignor to Container Corporation of America. Chicago, Ill. Filed Sept. 11, 1943. 5 claims. (Cl. 229-37).

2,415,949. Process for the activation of wood pulp prior to esterification. Judon H. Holloway, Robert S. Tabke, and Arthur N. Parrett, assignors to Rayonier Incorporated, Shelton, Wash. Filed Dec. 5, 1944. 10 claims. (Cl. 260-229). Pulp in sheet form is impregnated with acetic acid and then disintegrated to a fluffy mass.

February 25, 1947

2,416,332. Container for distribution of food and other products. Sylvester C. Lehman, Jersey City, N. J. Filed April 24, 1943. 11 claims. (Cl. 229-37).

2,416,364. Container. Allen B. Wilson and Kimberly Stuart, Menasha, Wis.; said Wilson assignor to Elizabeth R. B. Stuart. Filed Oct. 14, 1944. 4 claims. (Cl. 229-5.7).

2,416,372. Fibre container. Horace C. Brown, assignor to Rheem Manufacturing Company, Richmond, Calif. Filed Jan. 21, 1944. 3 claims. (Cl. 229-5.7).

2,416,381. Machine for stacking drinking cups. Eugene Conti, assignor to Herz Manufacturing Corporation, New York, N. Y. Filed June 3, 1944. 5 claims. (Cl. 214-6).

2,416,394. Method of making fiber insulated wire. Christopher J. Krogel, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Jan. 7, 1944. 3 claims. (Cl. 92-41). Method of making a seamless sheath of fibrous pulp material on a wire coated with a fully prehardened baking enamel.

2,416,413. Electrolytic treatment of alkaline process cooking liquors. Henry B. Somerset, Burnie, Tasmania, Australia. Filed April 1, 1944. 7 claims. (Cl. 204-99). A method of recovering sodium from waste liquor by electrolysis.

2,416,416. Method of and apparatus for winding tubes. Raymond E. Stoltz, assignor to M. D. Knowlton Company, Rochester, N. Y. Filed April 5, 1943. 13 claims. (Cl. 93-1).

2,416,447. Weather resistant flameproof paper. Edwin R. Laughlin, John L. Ayres, and Paul J. Mitchell, Jr., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed July 27, 1943. 1 claim. (Cl. 92-3). Paper contains from 5 to 20% antimony oxide and 5 to 25% of a chlorine-containing, water-insoluble organic compound which will liberate hydrogen chloride at the kindling temperature of the paper.

March 4, 1947

2,416,673. Decalcomania and method of making. Benjamin Asnes, assignor to Dennison Manufacturing Company, Framingham, Mass. Filed June 3, 1946. 24 claims. (Cl. 41-33).

2,416,676. Dominic J. Bernardi and Robert T. Florence, assignors to Interchemical Corporation, New York, N. Y. Filed March 9, 1944. 3 claims. (Cl. 106-29). The major constituent of a printing ink vehicle of the oxidating type consists of tall oil reacted with from 2 to 7% of its weight of hydrated lime.

2,416,680. Apparatus for making accreted fibrous products. Russell H. Curtis, assignor to Hawley Products Company, Geneva, Ill. Filed Aug. 14, 1943. 8 claims. (Cl. 92-54). A method of forming a molded product having a large number of relatively closely spaced apertures.

2,416,721. Apparatus and process for making resinous artificial board. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed May 14, 1941. 12 claims. (Cl. 117-65). Process of treating a web coated with heat-curing resin.

2,416,725. Multiple blank paperboard container. Marshall I. Williamson, assignor to National Folding Box Company, Incorporated, New Haven, Conn. Filed July 29, 1943. 5 claims. (Cl. 229-23).

2,416,734. Greaseproof paper. Jesse K. Boggs and George H. Sullivan, assignors to Rapinwax Paper Company, Minneapolis, Minn. Filed June 10, 1943. 9 claims. (Cl. 154-50). The paper contains the reaction product of phosphoric acid and an amine.

2,416,748. Carton folding mechanism. Adolph E. Gnoerk, assignor to Peters Machinery Company, Chicago, Ill. Filed Aug. 23, 1945. 9 claims. (Cl. 93-51).

2,416,789. Apparatus for coating paper. William H. Barrett and Bernard K. Asdell, assignors to Minnesota and Ontario Paper Company, Minneapolis, Minn. Filed Oct. 28, 1944. 5 claims. (Cl. 91-50).

2,416,813. Container. Cesare Barbieri, assignor to Dixie Cup Company, Chicago, Ill. Filed March 17, 1944. 2 claims. (Cl. 229-21). A flat-bottom paper cup having a double-ply wall.

2,416,816. Bag. Leo Campagnano, Rockaway Park, N. Y. Filed Dec. 9, 1943. 10 claims. (Cl. 229-56). A two-compartment bag.

2,416,993. Process of making containers. Donald E. Grove, West Los Angeles, Calif., assignor of one sixth to Vincent C. Hickson. Filed March 31, 1942. 1 claim. (Cl. 93-81).

2,416,998. Cellulose solution and method of making the same. Frank C. Hewitt and Charles R. Cayen, assignors to The Aspinook Corporation, Jewett City, Conn. Filed March 24, 1944. 2 claims. (Cl. 252-311). Cellulose is oxidized by an acid dichromate solution and the degraded product is dissovled in sodium zincate.

2,417,008. Chick box spacer. Andrew E. Miller, assignor to The Wabash Fiber Box Company, Terre Haute, Ind. Filed Nov. 8, 1944. 5 claims. (Cl. 229-6).

2,417,009. Process of coating with thermoplastic material. Bert C. Miller, assignor to Bert C. Miller, Inc., East Orange, N. J. Filed Sept. 19, 1939. 1 claim. (Cl. 117-64). A method of coating with a hot-melt material.

March 11, 1947

2,417,050. Envelope. Waldemar Baluk, Norquat, Canada. Filed Feb. 9, 1945. 1 claim. (Cl. 229-73). A duplex envelope.

2,417,104. Container. George Cope, assignor to The American Paper Bottle Company, Toledo, Ohio. Filed Nov. 8, 1943. 4 claims. (Cl. 229-37). A tubular paper container.

2,417,283. Lubricant. John C. Zimmer and George M. McNulty, assignors to Standard Oil Development Company, Linden, N. J. Filed Dec. 23, 1942. 8 claims. (Cl. 252-48.6). A cutting oil base consists of a cosulphurized blend of tall oil and an ester of a monohydric alcohol of at least 10 carbon atoms and a high molecular weight fatty acid.

2,417,298. End construction for paper containers. John Fitch, assignor to Standard Container, Inc., Montclair, N. J. Filed Aug. 18, 1945. 3 claims. (Cl. 229-5.5).

2,417,302. Chick box. Joseph G. Huye, New Orleans, La. Filed July 24, 1944. 3 claims. (Cl. 229-6).

2,417,346. Degradation treatment of lignin material. Friedrich E. Brauns and Irwin A. Pearl, asignors to Sulphite Products Corporation, Appleton, Wis. Filed Oct. 23, 1943. 9 claims. (Cl. 260-124). Sulfonated lignin materials are heated with calcium hydroxide in an alkaline water-butanol reaction medium at approximately 300° C.

2,417,375. Apparatus for producing seamless hollow bodies of felted fibrous material. Maurice G. R. Newbould, assignor to Papercrete Limited, London, England. Filed Feb. 15, 1943. 5 claims. (Cl. 92-60).

March 18, 1947

2,417,421. Portable carrier. Stanley R. Koelnis, Stamford, Conn. Filed Oct. 11, 1940. 6 claims. (Cl. 224-45). A bottle carrier.

2,417,435. Heat insulation. Carl G. Munters, Stocksund, Sweden. Filed Dec. 20, 1943. 4 claims. (Cl. 154-45). A method of arranging boards between parallel plate members to form an insulating body.

2,417,465. Detachable handle for paper bags. Hugh P. Botts, assignor of one half to Lawrence G. Botts, New York, N. Y. Filed Feb. 25, 1944. 19 claims. (Cl. 229-54).

2,417,498. Paper carton having combined top closure and pouring spout. Oscar H. Hultin, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed June 28, 1945. 2 claims. (Cl. 229-17).

2,417,550. Reclosing carton. Reynolds Guyer, assignor to Waldorf Paper Products Company, St. Paul, Minn. Filed Dec. 4, 1944. 9 claims. (Cl. 229-17).

2,417,570. Process for bleaching cotton. Stuart M. Rogers, assignor to The Solvay Process Company, New York, N. Y. Filed Sept. 3, 1943. 2 claims. (Cl. 8-108). An alkali metal hypochlorite and about 0.1 to 2 grams of a readily soluble stannate are used at a temperature of 70 to 200° F.

2,417,586. Method of making laminated structure. Powell Crosley, III, Coral Gables, Fla. Filed April 25, 1944. 6 claims. (Cl. 154-139).

2,417,611. Method of making insoluble starch product. Gordon G. Pierson, assignor to Perkins Glue Company, Lansdale, Pa. Filed June 15, 1943. 6 claims. (Cl. 260-209). Starch is treated with formaldehyde and an acid.

2,417,653. Paper box. Byron H. Lengsfield, assignor to Lengsfield Brothers, Incorporated, New Orleans, La. Filed Aug. 24, 1943. 1 claim. (Cl. 229-35).

2,417,658. Log bundling apparatus. Luke Nichols, Hood River, Oregon. Filed Aug. 21, 1944. 1 claim. (Cl. 9-15).

2,417,746. Slot insulation. Paul E. Fletcher, assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa. Filed April 26, 1944. 1 claim. (Cl. 171-206). Fish paper is a part of the assembly.

2,417,796. Electrical system for doctor blade control in papermaking machines. Edwin L. Happ, assignor to Ecusta Paper Corporation, Pisgah Forest, N. C. Filed March 18, 1943. 2 claims. (Cl. 92-74).

March 25, 1947

2,417,851. Selective impregnation of accreted fibrous plastic articles. Serenus H. A. Young, assignor to Hawley Products Company, Geneva, Ill. Filed July 13, 1942. 2 claims. (Cl. 92-55).

2,417,924. Desiccant paper. Wright W. Carey, assignor to Filtrol Corporation, Los Angeles, Calif. Filed Sept. 14, 1943. 6 claims. (Cl. 117-152). Paper is coated or impregnated with a natural or acid-washed sub-bentonite clay.

2,417,969. Dissociated starch and method of making the same. George V. Caesar and Thomas D. Thompson, assignors to Stein, Hall & Company, Inc., New York, N. Y. Filed Dec. 15, 1941. 9 claims. (Cl. 127-32). A slurry of starch of about 5 to 30% solids is repeatedly pumped under pressure through a restricted orifice to heat the slurry to a gelatinizing temperature.

2,418,066. Paperboard slitting and scoring mechanism. Hobart W. Bruker, Bordentown, N. J. Filed Aug. 12, 1944. 9 claims. (Cl. 164-61).

Principles of Color

The McGraw-Hill Book Company has just issued "Principles of Color and Color Mixing" by J. H. Bustanoby, color consultant. (130 pp. 7½ x 10). This is a useful guide for anyone concerned with the application of color. It provides a system for identifying a wide variety of hues, tints, tones, and shades, including 242 formulas for mixing them and 96 are shown in actual color.

Among the subjects covered are: pigments and mediums; color mixing; tested formulas, color sensation, color psychology, color systems; and a dictionary of color terms.

Although this book is of primary value to artists and designers it should be of value to anyone engaged in sales promotion and advertising.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y. at $4.50 per copy.

Natural and Synthetic Rubbers

Elsevier Publishing Company, Inc. has recently issued the second in its series of monographs on the progress of research in Holland. This is the "Technological and Physical Investigations on Natural and Synthetic Rubbers" by A. J. Wildschut, Research Engineer of the Rubber Foundation in Delft, Holland. Most of the information included in this series has remained secret until now.

The present volume (173 pp. 6 x 8) covers the extensive investigation by the author on materials like hevea rubber, neoprenes, thiokols, koroseal, etc. A survey is given covering standard measurements of mechanical, electrical, chemical and other properties; mechanical properties under various circumstances, and x-ray investigations.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y. at $3.00 per copy.